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The Center of Population of Medical Education,
1870-1930

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The center of population is defined by the United States Census Bureau as "the point upon which the United States would balance, if it were a rigid plane without weight, and the population distributed thereon, each individual being assumed to have equal weight and to exert an influence on the central point proportional to his distance from the point." In other words, it is the center of gravity of the weighted plane, or a two-dimensional average of the population.

The determination of this point at the regular decennial census intervals is the best method that has been devised by the Census Bureau to trace compactly the rate and direction of general movements of the population. The first official computation of this point was made under the direction of Francis A. Walker, superintendent of the ninth census, for publication in the first statistical atlas of the United States published in 1874.¹ At that time the position of the center of population was computed for each census year since 1790.

So convinced has the Census Bureau become of the value of this mode of summarizing population trends that in later years it has made much more extensive use of the same method. In 1910, the positions of the center of population since 1880 for each state were computed. In 1920, the method was further extended to include centers of foreign born population, of Negro population, of urban and rural population, and even to determine centers of agriculture, of manufacturing, of number of farms, of farm area, of improved acreage, of value of farm property, and of the production of corn, wheat, cotton and oats.²

1. Walker, Francis A. (Compiler), "Statistical Atlas of the United States, Based on the Results of the Ninth Census." Washington, 1874: p. 5. For an earlier unofficial computation and other information regarding history of the center of population see Eells, Walter Crosby, "The Center of Population—a Prophecy and its Fulfilment," in *The Scientific Monthly*, XX: 78-84, January, 1925.

2. Sloane, Charles S. (Compiler), "Center of Population and Median Lines and Centers of Area, Agriculture, Manufacturers and Cotton." (Fourteenth Census of the United States, 1920.) Washington, 1923, pp. 12-41.

Why not, then, educational centers of population as well? A method which has proved so valuable in summarizing movements of general population should be equally valuable in studying the movements of the higher educational population, the students in the colleges, universities, and professional schools of the United States.³ The object of this paper is to report and discuss the results of computations which have been made by the author to determine the center of population of medical higher education and the centers of the related fields where the populations consist of students in dentistry, pharmacy, osteopathy and veterinary medicine for each census period from 1870 to 1930 as far as data are available.

METHOD OF COMPUTATION

The data on which the computations are based were taken from the official reports of the United States Office (formerly Bureau) of Education.⁴ These statistics are not perfect, but they probably are as accurate and reliable as are available. The method used was the same as that used by the Census Bureau, with the substitution of "states" (with their centers of population as computed by the Census Bureau) for "square degrees" as the unit of computation.⁵

LOCATION OF CENTERS

The latitude and longitude and approximate location of the centers of population of education in the various medical sciences, and certain related points, for 1930, are shown in Table 1 and in Figure 1. The abbreviation "C.S." in Table 1 indicates that the town named is the county seat of the county in which the given center is located.

As indicated on the map, the center of medical education, as determined by the distribution of almost 22,000 medical students, is in central Indiana, closer to the general center of population for the entire country in Southern Indiana than any of the other points plotted. The medical center is only sixty-two miles northeast of the general center. Somewhat further north

3. For two such studies, see Walter Crosby Eells, "The Center of Population of Higher Education," *School and Society* (September 11, 1926), XXIV, 339-44; and "The Center of Population of Engineering Education, 1900-1930," *Journal of Engineering Education* (June 1935), XXV, 662-69.

4. Reports of the Commissioner of Education: 1870, p. 524; 1880, pp. cliii-cliv; 1889-90, II, pp. 1022-23, 1044; 1899-1900, II, pp. 1970, 1972-73, 2012; 1910, II, p. 1034; Biennial Survey of Education (*Bulletin*, 1923, No. 29), p. 294; Biennial Survey of Education (*Bulletin*, 1931, No. 20), pp. 349-50.

5. "In making the computations for the location of the center of population it is necessary to assume that the center is at a certain point. Through this point a parallel and a meridian are drawn, crossing the entire country. . . . The product of the population of a given area by its distance from the assumed parallel is called a north or south moment, and the product of the population of the area by its distance from the assumed meridian is called an east or west moment. In calculating north and south moments the distances are measured in minutes of arc; in calculating east and west moments it is necessary to use miles on account of the unequal length of the degrees and minutes in different latitudes. The population of the country is grouped by square degrees—that is, by areas included between consecutive parallels and meridians—as they are convenient units with which to work." Sloane, Charles S., *loc. cit.*, p. 5.

and east is the center for students of pharmacy. The center of population for dental education, however, is farther west, in central Illinois, while the centers for veterinary medicine and osteopathy are farthest west of all, in northeastern Missouri, the osteopathic center being five miles west of the center for veterinarians. The center of population for all students in higher educational institutions in the country in 1930 was in exactly the same latitude as the center for medical education, but was seventy-four miles west of the medical center, in Eastern Illinois.

TABLE 1. LOCATION OF CENTERS OF POPULATION OF EDUCATION IN MEDICINE AND RELATED SCIENCES, AND CERTAIN RELATED POINTS, 1930.

Field	Latitude North	Longitude West	State	County	Distance from important cities and towns
Medicine	39° 44'	86° 23'	Ind.	Hendricks	12 miles W. of Indianapolis 7 miles E. of Danville, C.S.
Dentistry	39° 50'	88° 34'	Ill.	Piatt	21 miles E. of Decatur 14 miles S. of Monticello, C.S.
Pharmacy	40° 25'	85° 49'	Ind.	Grant	48 miles NE. of Indianapolis 12 miles SW. of Marion, C.S.
Veterinary Medicine	40° 27'	92° 21'	Mo.	Scotland	48 miles W. of Keokuk, Iowa 9 miles W. of Memphis, C.S.
Osteopathy	39° 24'	92° 26'	Mo.	Randolph	16 miles N. of Columbia 3 miles E. of Huntsville, C.S.
Higher Education All Students	39° 44'	87° 46'	Ill.	Edgar	27 miles NW. of Terre Haute, Ind. 10 miles N. of Paris, C.S.
General Population	39° 04'	87° 08'	Ind.	Greene	32 miles SE. of Terre Haute 8 miles NW. of Bloomfield, C.S.
Center of Area..	39° 55'	98° 50'	Kan.	Smith	128 miles NW. of Manhattan 10 miles N. of Smith Center, C.S. 6 miles S. of the Nebraska line

In comparison with the general distribution of the population of the country, there is greater emphasis in all of the medical and allied educational fields in the north than in the south; for medicine and pharmacy, a slightly greater emphasis in the east than in the west; in dentistry, a distinctly greater emphasis in the west; and in osteopathy and veterinary medicine, markedly greater emphasis in the west. All of these centers are considerably east but not far north of that interesting point in northern Kansas known as the "center of area," the center of gravity or balancing point of the country if the entire population were distributed over it with uniform density.

CHANGES IN LOCATION OF THE CENTERS

Even more interesting and significant than a study of the present situation is an investigation of trends in the centers of the medical sciences

during the past sixty years. It is more important to know where we are going than where we are. Table 2 reports the location of each center, the population on which it is based, and its movement both in a straight line and north or south and east or west for each decennial year since 1870 as far as the data are available.⁶ This information is best visualized with the aid of the larger scale map of Missouri, Illinois, Indiana, Ohio, and



FIGURE 1. Location of Centers of Population of Medical Education and Related Points, 1930

Pennsylvania shown in Figure 2. On this map the name of the field is attached to the earliest point for which data were available, arrows leading to the locations in successive decades. The map also shows, by means of double concentric circles, the positions of the general center of population for corresponding years.

It will be noted that every center plotted is north of the general center of population. Centers for medicine, dentistry, and pharmacy were all located in Pennsylvania in 1870. All centers have shown a general tendency to move westward rapidly and southward slowly, corresponding in general nature to the movement of the general population of the country westward, as summarized in the series of concentric circles. The movements of medical education, however, have been much more rapid in their westerly courses than those of the general population. Westward the

6. Comparable data for earlier years are not available. Data are not available for veterinary medicine earlier than 1890, nor for osteopathy earlier than 1930.

"course of empire" has taken its way, and much more rapidly in the medical fields than on the part of the general population.

The most rapid movement of all has been shown by veterinary medicine which in only four decades has shifted from western Pennsylvania

TABLE 2. LOCATION AND MOVEMENT OF CENTERS OF MEDICAL EDUCATION—1870-1930

Field and Year	Number of Students	Latitude North	Longitude West	Movement in miles during the preceding decade				
				From point to point in a straight line	North- ward	South- ward	East- ward	West- ward
MEDICINE								
1870.....	6,235	40° 11'	80° 19'					
1880.....	11,929	40° 36'	82° 15'	105.7	28.6			101.8
1890.....	15,414	39° 48'	83° 11'	74.0		55.0		49.5
1900.....	25,213	39° 36'	85° 12'	107.9		13.7		107.0
1910.....	21,394	39° 08'	84° 43'	41.5		32.5	25.8	
1920.....	14,242	39° 59'	85° 13'	65.2	59.5			26.7
1930.....	21,964	39° 44'	86° 23'	64.6		18.5		61.9
DENTISTRY								
1870.....	237	40° 30'	76° 58'					
1880.....	730	40° 49'	78° 36'	88.2	19.4			86.0
1890.....	2,696	40° 22'	82° 49'	223.7		27.0		222.1
1900.....	7,928	40° 05'	85° 34'	146.9		16.8		145.9
1910.....	6,439	39° 40'	85° 55'	31.4		25.3		18.6
1920.....	8,809	40° 12'	87° 48'	104.8	31.8			99.9
1930.....	3,162	39° 50'	88° 34'	46.4		22.2		40.7
PHARMACY								
1870.....	440	40° 56'	78° 33'					
1880.....	1,347	40° 39'	81° 39'	162.9		16.7		162.0
1890.....	2,871	40° 24'	82° 30'	47.1		14.7		44.8
1900.....	4,042	40° 21'	85° 02'	133.5		3.2		133.5
1910.....	6,226	39° 50'	85° 20'	35.0		31.2		15.9
1920.....	5,026	40° 21'	87° 20'	110.6	31.2			106.1
1930.....	10,906	40° 25'	85° 49'	80.0	3.9		79.9	
VETERINARY MEDICINE								
1890.....	463	41° 21'	79° 22'					
1900.....	362	40° 51'	82° 57'	189.7		29.9		187.3
1910.....	2,717	40° 11'	88° 08'	275.9		39.5		273.1
1920.....	908	40° 20'	89° 29'	71.6	8.8			71.1
1930.....	882	40° 27'	92° 21'	151.2	6.9			151.0
OSTEOPATHY								
1930.....	1,654	39° 24'	92° 26'					

to Missouri, crossing Ohio, Indiana and Illinois in the process. Pharmacy has moved from Pennsylvania to Western Indiana but with a marked reversal eastward to central Indiana again between 1920 and 1930. Dentistry, which began farthest east of all, near Harrisburg, Pennsylvania, in 1870, had reached by 1930 a position farther west than any others, except



FIGURE 2. Location and Movement of Centers of Population of Medical Education and of the General Population, 1870-1930.

veterinary medicine and osteopathy. Medicine has exhibited the slowest change of all, beginning in extreme western Pennsylvania in 1870, and only moving as far westward as central Indiana in the six decades under consideration.

It seems probable that all of the centers plotted, with the possible exception of pharmacy, will continue to move westward, although probably not very rapidly. Such facts as are presented in this paper not only furnish a compact summary of general trends for more than half a century of significant progress in medical education in the United States but also suggest pertinent food for thought on the part of those now responsible for the determination of general policies in the field of medical education in the next half century.

Teaching of Pharmacology

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The rapid progress of medical sciences presents a difficult problem for teacher and student alike. A vast number of new facts and not a few theories are added to the body of the preclinical disciplines from year to year. To cover adequately only the salient features of a science in from 150 to 250 hours becomes increasingly difficult, and preclinical education will sooner or later be confronted with a crisis. At the present rate of medical progress, the teaching of the fundamental medical sciences presents a pedagogic problem even if the body of that science is systematized conveniently. A good classification of the mass of scientific facts is always an invaluable aid to the teacher because he can easily subdivide the newly discovered facts and recently formulated theories among the existing categories of his science.

The teacher of pharmacology is, like his colleagues, keenly aware of the difficulties which the growth of his science presents from a pedagogic viewpoint. But, in addition to this difficulty, a convenient system, such as the morphologist or physiologist possesses, is not at his disposal. His embarrassment is, then, of a twofold nature, arising, in part, from the continually increasing bulk of available and desirable information, and, in part, from the lack of a rational classification.

A satisfactory or generally accepted classification of substances with definite pharmacologic actions has not yet been proposed. Our fundamental knowledge of drugs still has so many gaps, the mechanism of action of so many pharmacologic agents is still so little understood that any classification must be arbitrary or tentative in character. Some writers, in utter despair, turned to an alphabetical arrangement of drugs and their actions; others were satisfied with a simple division of drugs into remedial agents of inorganic, vegetable, and animal origin. This primitive classification obviously is crude since a drug of animal origin, as epinephrine, and a drug of vegetable origin, as ephedrine, may have similar effects, whereas purely vegetable alkaloids often have entirely different and unrelated actions.

A further and more detailed chemical classification has also been proposed. McGuigan (1921), for example, classified the commonly used organic pharmacologic agents into ten chemical groups: proteins, lipoids or ether extracts, carbohydrates, alkaloids, glucosides, volatile oils, stearoptenes, resins, organic acids and pigments. The chief objection against a

chemical classification is that while many drugs with similar chemical groupings in the molecule have similar pharmacodynamic actions, this does not hold for all or even most of the chemical groupings. The actions of sodium and potassium are very dissimilar, as well as the actions of chlorides, bromides, and iodides. Cocaine and atropine are chemically related alkaloids, but possess vastly different pharmacodynamic actions.

Meyer and Gottlieb used a physiological classification depending on whether the drug acts on the nervous system, eye, heart, kidneys, gastrointestinal tract, etc. Such a classification is also unsatisfactory. Many drugs produce the same effects by different mechanisms, e.g., the heart may be acted upon through the medullary centers, the endings of its extrinsic nerves, the bundle of His, or the myocardium. Also, many drugs have equally important actions on widely different structures, e.g., atropine may be used to dilate the pupil, to accelerate the heart, to relax the contracted gut, or the contracted bronchial musculature. Thus, in this type of classification the same remedial agent must be discussed under five or six different headings although its fundamental action may be the same in every case.

Several therapeutic classifications have also been proposed. These systems group together drugs with identical or similar therapeutic effects. This classification meets with essentially the same difficulties as the physiologic, since many dissimilarly acting drugs may produce identical therapeutic results. However, several of these therapeutic groups still survive in the textbooks and cannot be dislodged: anthelmintics, emetics, expectorants, antipyretics, etc.

Rudolf Buchheim, among his many other services to pharmacology, was also a pioneer in the classification of drugs. He grouped together all those drugs which have similar pharmacodynamic actions, giving to each group the name of its best known or most thoroughly investigated member. If a new substance is discovered with actions similar to those of the members of an already fixed group, it can conveniently be classed as a new drug of the group. For example, the digitalis group, one of Buchheim's original groups, includes all cardiac drugs with digitalis-like actions; newer drugs, such as ouabain, scillaren and cymarin, may be added to this group without difficulty.

It is obvious, however, that this eclectic system of Buchheim, which is still the soundest of all pharmacologic classifications, must undergo constant changes as more and more drugs are being discovered which do not fit into the original groups. Also, some of the older groups must be broken up, or two or three formerly independent groups must be united as our knowledge of the finer mechanism of the action of drugs increases.

Schmiedeberg, in his classical "Grundriss der Pharmakologie," and his pupil Cushny, in his "Textbook of Pharmacology and Therapeutics," follow Buchheim's ideas of classification. Cushny classifies the drugs into locally acting drugs, drugs acting after absorption and heavy metals. The group of the locally acting drugs includes among others, demulcents, emollients, bitters, digestive ferments, irritants, purgatives, vegetable astringents, anthelmintics and antiseptics. The systemically acting drugs are divided into the narcotics of the methane series, the opium series, cannabis indica, bromides, strychnine, picrotoxin, caffeine, saline diuretics, curara, nicotine, atropine, pilocarpine, physostigmine, cocaine, adrenaline, ergot, etc. The emetics are followed in his textbook by colchicine, cinchophen, saponins, prussic acid and antipyretics. In all these excellent textbooks it is difficult to discover a lucid, workable system. The lecturer in pharmacology is in the same quandary.

During the past few years at Georgetown University School of Medicine it has been the constant endeavor of the pharmacology staff to supplement the required textbooks of Sollmann and Cushny with a series of lectures in an attempt to facilitate the teaching and learning of pharmacology. At first, the lecture course was based on the system of Cushny. In a constant effort to simplify the teaching material this system was gradually changed and modified until the following sequence of lectures on pharmacodynamics was adopted:

LOCALLY ACTING DRUGS

I. Drugs modifying inflammatory processes.

A. Phlogomimetic drugs (irritants, counterirritants)

B. Antiphlogistic drugs

(a) Protectives

demulcents

emollients

dusting powders

(b) Astringents

(c) Antiseptics

II. Drugs acting locally in the alimentary tract.

A. Stomachics

B. Digestive ferments, and flavoring agents.

C. Evacuants

D. Anthelmintics

SYSTEMICALLY ACTING DRUGS

I. Nerve (neurotropic) drugs.

A. Drugs acting on the central nervous system.

(a) Stimulants

1. cortical
2. medullary
3. vomiting center (emetics)
4. spinal

(b) Depressants

1. aliphatic anesthetics
2. aliphatic hypnotics
3. opiates
4. bromides
5. depressants of the heat centers (antipyretics)
6. depressants of the cough center and other expectorants.

B. Drugs acting on the peripheral nervous system.

- (a) somatic motor nerve ends
- (b) autonomic ganglia
- (c) autonomic motor nerve ends (parasympathetic and sympathetic)
- (d) sensory nerve ends

(Under each heading first the stimulants and then the depressants are considered)

II. Muscle (myotropic) drugs

- A. Skeletal muscle
- B. Smooth muscle
- C. Cardiac muscle

(A consideration of diuretics follows the discussion of digitalis)

III. General protoplasmic poisons and specifics, with a discussion of chemotherapy.

The main divisions of Cushny's system are thus retained. The locally acting drugs are conveniently divided into only two classes,—the drugs used in the treatment of inflammation, and those used locally in the alimentary tract. This is admittedly an arbitrary division, but, happily, all locally acting drugs can be classified as members of these two groups. There may be slight overlapping because astringents and antiseptics, as well as protectives, are also used locally in the gastro-intestinal tract. However, these drugs can be discussed fully under the pharmacology of inflammation.

The systemically acting drugs are divided into three large groups: the two organotropic groups, the nerve and the muscle drugs, and the general protoplasmic poisons, including the specifics. The drugs acting on the

nervous system are divided into two large classes, those acting on the central nervous system, and those acting on the peripheral nervous system. The centrally acting drugs are classed as stimulants and depressants. The former group contains the emetics, which are really medullary stimulants, directly or indirectly, while the latter group includes the antipyretics and the expectorants because of their conspicuous actions on parts of the central nervous system.

The discussion of the drugs acting on the peripheral nervous system proceeds in the same general manner as already outlined by other authors. The sequence of lectures is as follows: pharmacology of the somatic motor nerve ends, the autonomic ganglia, parasympathetic nerve ends, sympathetic nerve ends and sensory nerve ends. It is recognized that certain drugs, such as cocaine, atropine or scopolamine, have important central as well as peripheral actions, yet, because of the overwhelming practical importance of their peripheral action, they are discussed fully under that heading.

The myotropic drugs are taken up next in the order outlined above. The diuretics are discussed in connection with the lectures on cardiac drugs, the logical link being the fact that they are used when digitalis no longer rids the patient of edema.

The lectures conclude with the discussion of protoplasmic poisons and specifics. Here the important metals and metalloids are discussed, and their specific parasitotropic actions are emphasized.

The advantages of this system lie in the fact that there are no "loose ends" in this classification. Every drug can be placed in one or the other category. The titles of the lectures are given to the students before the beginning of the course and this outline is followed strictly. Thus, the students get used to the idea that there is a system in pharmacology. An attempt is made to base the classification of drugs on their finer loci of action.

The laboratory exercises are correlated with the lecture course in so far as is possible. While the lecturer discusses the locally acting drugs, the laboratory periods are devoted to chemical pharmacology and pharmaceutical manufacturing. Lectures on systemically acting drugs begin when the students take up the study of central stimulants and depressants in the laboratory, and an attempt is made to keep the laboratory in pace with the lectures; if possible, precede them. This is the system which Doctor M. S. Dooley of Syracuse University follows and which undoubtedly others also follow. On completing the laboratory course in chemical pharmacology, the students are required to report for a practical examination,

which consists of the identification of unknown drugs by their physical characteristics and chemical tests, and they are also required to compound a number of standard pharmaceutical preparations and incompatibilities. The second part of the practical examination is carried out after the students complete the exercises in pharmacodynamics. During this examination the students are again required to identify unknown drugs, but this time by their characteristic actions on animals.

In conclusion, it might be added that at the beginning of the course a few introductory lectures are given on the scope and history of pharmacology, on general pharmacodynamics, applied pharmacodynamics, i.e., rational therapeutics, and the principles of drug classification. The toxicologic aspects are emphasized, both in chemical and pharmacodynamic laboratory, and also during the lectures on each group of drugs. A separate lecture course with practical exercises is given on prescription writing and posology.

A Method of Presenting Biochemistry in Harmony With Modern Medicine

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We are all acquainted with the progress of the last ten years in shaping the older academic biochemistry into a more intimate and useful tool for the physician. During this period new texts have appeared (the clinical or applied biochemistries) which provide an understandable literature for our students. The Germans had long preceded us in this matter.

During the formative period referred to, our biochemistry department was pioneering in the same direction, at first with very little progress because the biochemists did not fully appreciate the very real problem of coordination that faces the medical student in his clinical work. The suggestions of many associates and students have aided in overcoming the difficulties. A really satisfactory method has been evolved. The present arrangement is as follows:

The fundamental medical course in biochemistry is presented to the first year student by a corps of teachers. Before the study of any chemical or metabolic topic is begun, a clinical lecturer demonstrates to the students the need of study from the clinical viewpoint. A patient is always presented, so that students may crystallize their ideas about a concrete example. This year we have had ten such lecturers, each one being a clinician who is careful to interest the student in the physiological aspects of his case. These lecturers represent every important clinical field, from neurology to dietetics. In the academic teaching which follows, the regular members of the biochemistry staff guide the student through his reading, and correlate his lecture and laboratory work at voluntary conferences. Emphasis is placed on the development of the student's powers of observation and reasoning; memorizing is discouraged by the type of examination. During the examinations the student is provided with a Handbook of Biochemistry (edited by the department), so that he has at hand many data that clinicians and biochemists themselves can hardly remember from year to year. The examinations compel the student to use his knowledge and data in the solution of sensible and typical biochemical and clinical problems.

During the first course each student is asked to find a small amount of original literature on an assigned topic, previously presented in class. He reports to the professor for a discussion of his cards. In this way his attention is drawn to the types and sources of scientific literature. In the

laboratory he has entirely a problem course, his work being guaranteed by a series of unknowns and practical examinations. He is encouraged to be original in his notebook and in his laboratory work. No questions are asked as to his methods; it is only required that he develop the ability of solving a problem, as he will have to do at the bedside later. This method guarantees a maximum amount of interested work in the laboratory. Students instinctively like a problem course. They remark about the difficulties of this competitive work, but they feel a great satisfaction over their achievements.

This first course is kept broad, having been formulated to cover all that the student must know: metabolism, nutrition, analysis, foods, dietetics, the problems of metabolic diseases. He leaves this course with his experience, notes and handbook, prepared to renew his study of biochemistry when he meets his clinical problems. For one hurried year he is ushered through many other courses, getting his fundamentals of scientific and clinical medicine.

In his third year, he returns to biochemistry again. Now his problems are different and his interest has changed greatly. The hospital contacts have developed a desire for a deeper knowledge of biochemistry than that of the first year. Now the student wishes to study disease, not to listen to another set of lectures by a scientist. He is glad to have aid from the latter, but he must do his own correlating.

Our plan for the third year is to ask each student to acquaint himself thoroughly with a disease that interests him. He selects his topic and goes to work. The instructor is careful to direct this work into the proper channels. The student is told to read as a clinician would, to study the disease in its entirety, but he is warned to emphasize the metabolic, dietetic, laboratory and physiological aspects of disease. From three to six months are allowed for this task, and then the student appears in his sectional class (twenty students or less) and presents a fifteen minute report of his conception of the present status of our knowledge of this disease. This is excellent training for the students. They learn to present clearly and concisely a great deal of information in a short time. They know what their fellow students have heard in classes and clinics; they know what has not been made clear to all.

After this brief introduction, which has served to focus the attention of all students on the morning's topic, the clinical associates begin their quizzing of the students. From three to six clinicians from several fields take part in this exercise; always one from internal medicine, from surgery and from biochemistry; often residents and specialists. It works very well to have one medical resident who is young enough to be a companion to

the students and one staff man who has practised for many years. We have been very fortunate to have the head of our medical staff attend most of these classes. His opinions are invaluable when disputes arise.

It is important during this questioning to discourage speeches by instructors. The students have heard plenty of didactic work. They appreciate an opportunity to ask the questions that have been causing them difficulty. Usually we limit each instructor to five or ten minutes of questioning. Toward the end of the period we attempt to change the formal questioning to an informal conference in which the students ask questions of the instructors and the latter of each other. Where previously, under the older didactic system, students were often bored with the entire proceeding, they now attend classes more frequently than required; and the instructors find that they always have different ideas to exchange with one another before the class.

Our plan has worked well. It correlates, it brings both student and clinician back to the medical sciences again. However, there is one very necessary essential for the successful course. There can be no correlation of biochemistry and medicine without the wholehearted cooperation between the professors of medicine and of biochemistry. Our course owes its success largely to those understanding clinical associates who have always given cheerfully of their time. This type of informal teaching and cooperation is continued in the elective seminar in biochemistry and pharmacology, which is attended by about fifteen upper classmen.

Teaching of Physiology to Medical Students I.

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The present decade is a period of change and experimentation in the field of education in general. Certain universities and colleges have significantly altered the character of their undergraduate curricula. In the medical schools, likewise, there have been changes in pedagogic methods, particularly as regards the establishment of more full-time chairs in the clinical branches.

Nevertheless, a perusal of the literature of the past and present decades reveals but little relative to methods of teaching physiology to students of medicine. Unquestionably, greater attention will be given to the teaching of the preclinical sciences when superior pedagogy is recognized more adequately by university authorities in making appointments and according promotions. A medical school administration must of necessity consider research ability if the institution is to discharge creditably its function of advancing knowledge, but the equally important function of effectively imparting knowledge to students should not be lost sight of in the selection of departmental staffs.

That there is a desire for some revision of the teaching methods employed in medical physiology, however, is indirectly apparent from the recent publication of one new textbook in this field and the anticipated publication of at least two others. These newer textbooks aim at a greater emphasis on the service features of the course in physiology as a preparation for the subsequent medical school curriculum. This altered viewpoint is unquestionably a desirable one. Physiology as a pedagogic subject must not lose its identity and simply be a lackey to the clinical branches, but teachers of medical physiology should recognize a difference in the needs and interests of the medical student as contrasted with the graduate student. Despite objections from some quarters to the use of the term, "medical physiology," it has a definite meaning and is expressive of the fact that the subject should be taught from a viewpoint and plane manifestly distinct from those which characterize the types of presentation suited to graduate, dental, undergraduate and nursing students, respectively. It is difficult to measure pedagogic success, but the most effective teachers of medical physiology appear to be those who are mindful of their primary objective, viz.,—the training of men for the practice of medicine. This attitude in no way excludes encouragement to that minority of

medical students who will ultimately find their proper places in teaching and research in preclinical or clinical laboratories. A well balanced course in medical physiology does not necessarily require that the instructor possess the M.D. degree but assuredly he ought to have a sympathetic understanding of what constitutes adequate preclinical preparation of the medical student along physiological lines.

In order that the primary objective of a course in medical physiology may be achieved as completely as possible, human physiology should be stressed wherever the facts are available. In considering the physiology of the central nervous system and of the special senses, especially, dissimilarities in function between man and the lower forms become apparent and subjective phenomena assume great importance. It is sometimes forgotten that much information relative to human physiology can be gleaned from the clinical literature. The invaluable data of comparative physiology must of necessity be referred to frequently, but every effort should be made to indicate their applicability to the physiologic mechanisms of the human body. Occasional reference to or demonstration of a patient with some clinical disorder which illustrates a physiological principle will do much to stimulate the interest of the student. Cognizance should be taken of the fact that student enthusiasm for medical physiology is largely a matter of creation by the instructor and rarely arises *de novo*, as is frequently true for the various clinical sciences. This is tantamount to saying that the effective teaching of medical physiology entails a larger effort than successful pedagogy in the clinic.

The natural human tendency to over-emphasize the particular branch of physiology in which the instructor is interested from a research standpoint should be avoided assiduously. Moreover, considerable care should be exercised in the selection and presentation of recent and still controversial advances in physiology. The instructor in physiology who registers contagious enthusiasm for his subject keeps abreast of the ever-widening frontier of physiological knowledge and ought to be actively engaged in moving outward at least one particular stretch of that frontier. Nevertheless, he should bear in mind the distinctions between the needs and interests of a class of medical students and a physiology seminar group. When this attitude is more general, there will no longer be heard the charge that physiology as taught at a certain institution is largely a course in some particular branch of the subject.

The suitability of certain experiments which have traditionally been included in the laboratory work for medical students should be questioned, especially when the retention of such experiments excludes others of more recent origin and of greater significance to the training of future physicians.

This statement is particularly applicable to certain of the classical experiments on the physiology of skeletal muscle. The laboratory work should stress mammalian physiology, as far as circumstances permit, and sight should not be lost of the fact that a number of experiments can readily be adapted to permit of their performance on the student himself. Emphasis should be placed on the physiologic mechanisms demonstrated rather than on the methods employed. Carelessness in the carrying out of experiments should not be countenanced, and the results obtained should be sufficiently accurate to permit drawing proper conclusions, but a degree of precision approaching that necessary in research, should not be expected.

These fundamentals are in no sense new and are utilized successfully, in whole or in part, by a number of medical schools. They have formed the basic premises of the course in physiology at the University of Louisville School of Medicine for the past three years. During the same period, however, we have employed a method for the reporting of laboratory experiments which has some unusual features. Previously, this method had been used in a somewhat different form at the University of Louisville by Dr. W. F. Hamilton, now of the University of Georgia School of Medicine. The orthodox laboratory notebook has been dispensed with entirely. The direction sheets for a given experiment contain spaces for the recording of results and the insertion of graphs. The sheets also include questions or incomplete statements covering the significant features of the experiment with appropriate spaces for brief answers or completing words. The filled-in direction sheets constitute the student's record of the experiment.

After due preparation, the students arrange to report each experiment to a member of the instructional staff. A reporting unit consists of two mammalian experiment groups consisting of four men each. The reports are made either during the last hour of a laboratory period or during a free period convenient for both students and instructor. Due to the preference of the students, however, most of the experiments are reported under the latter arrangement. At the time of the report, the direction sheets are examined briefly and twenty minutes are devoted to discussing the salient features of the experiment. The students are not only questioned but they are encouraged to lay their difficulties before the instructor. Each student receives a grade for his report, and at the end of the course the average of these grades weighs one-third in the final evaluation of the student's work.

Our experience has shown that this procedure offers several distinct advantages over the older notebook system. The student does not spend hours in what tends to become a more or less mechanical process of writing

up a notebook, all too frequently against the pressure of time on the night preceding the due date. The amount of time required of the student for the preparation and reporting of experiments under the plan outlined is usually less than under the notebook system. The practice of plagiarizing the notebooks of previous classes is largely obviated. The student has an opportunity to clarify dubious points and the instructor to emphasize the significance of the experiment in a way that is impossible when notebooks are collected and corrected. Furthermore, as a result of the type of repeated, personal contact necessitated by the reporting system, the instructor is in a position to evaluate the capabilities of the student more accurately than is possible by means of observation in the laboratory, large quiz sections, and written examinations alone.

The division of experiments for reporting purposes among three laboratory instructors, two of whom are of professorial rank at the University of Louisville, means that approximately two half-days per week must be set aside by each instructor for receiving reports during the period of the course. This added teaching load has been assumed cheerfully, however, inasmuch as the method pays sufficient dividends in the form of more effective pedagogic results.

Modern Foreign Language Study in the Premedical Curriculum

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My paper on "Modern Foreign Language Requirements for Admission to American Medical Schools and Colleges" published in the November, 1934, issue of this JOURNAL, aroused considerable interest in the subject as evidenced by the more than 130 letters of comment received from deans of medical schools, colleges of liberal arts, and other institutions approved for premedical training. In sending a copy of the reprint of my paper to these educators, the object was to study their reaction to the findings of my survey, and also to write, if the results warranted it, a second paper on the same subject, which I would base on the more important replies. A study of these comments and criticisms both from deans of medical schools and liberal arts colleges might serve to establish contact and result in closer cooperation between the two groups to the end that better understanding of needs and possibilities will lead to more acceptable entrance requirements.

The comments revealed that even deans of medical schools and of liberal arts colleges and advisers to premedical students were unaware of the general tendency concerning modern foreign language requirements for admission to medical colleges. Some of them were frankly surprised by the lack of uniformity in the language requirements, since they had always taken for granted that a knowledge of French or German was a *sine qua non* for admission to the study of medicine. ♦

In order to clarify and, if necessary, to emphasize a point which I made in my original article, it may be well to reiterate that the matter of foreign language requirements for admission to medical schools, as indeed of most other premedical requirements, is in a more confused state than ever before and in need of a very careful and thorough revision. Most educators agree on this point. It is opportune to recall in this connection that the Association of American Medical Colleges does not recommend a foreign language for admission to medical schools. The American Medical Association, after having had the modern foreign language requirement for many years, in 1932 adopted the standards of the Association of American Medical Colleges, and dropped the requirement. The State of New York does not require a knowledge of any foreign language for the medical

student qualifying certificate; it, however, urges students to have a knowledge of one or two foreign languages.

This problem of foreign language requirement is regarded by some deans as a special instance of a larger educational question. Why, they ask, should medical schools place certain subjects as requirements for entrance to medical schools? Is it, perhaps, because medical schools are more or less bound by tradition to the handicraft trade-school view of medical education? The University of California Medical School, for example, is all for more freedom of premedical work, less rigorous requirements, and more opportunity for variously endowed students to enter medicine. Medical schools are moving slowly toward this end. Dean Russell H. Oppenheimer of Emory University School of Medicine does not believe that medical schools should assume the task of forcing their students to read medical literature in foreign languages. At best such a procedure, he thinks, would meet with only superficial response and it is doubtful that any would continue except those who would ordinarily do so without this requirement.

The general opinion among deans of medical schools seems to be that the present requirement of most schools is useless. They hold that medical schools should either do away with the modern language requirement altogether or else enforce it by means of sufficiently rigid examinations. The acceptance of certain recorded study units or semester hours as testifying to reading ability is hypocritical. On the other hand, some schools do not pretend that a minimum requirement of study units qualifies a student to read scientific literature published in that language, but they find that a "reading knowledge" of any language is apt to be misinterpreted so they prefer to require a certain number of semester hours of credit. The "reading knowledge" requirement, they claim, covers a wide latitude, since it gives no indication of the extent that one must use a dictionary in putting the reading knowledge to use. However, a few deans maintain that the reading test as administered in their colleges is not at all perfunctory but a real test.

Yet it is a well-known fact that the average student, on being admitted to a medical school, does not know enough French or German to be of very much use to him in his future career. These are the two languages which are most often, but by no means exclusively, required by every school. With the exception of a few notable and praiseworthy cases, the average student has only obtained a smattering of one or both of these languages. His training has been so inadequate that he is unable to read with any degree of facility. The difficulty with German, according to some deans, is that it varies so much. Dean Thomas Ordway of the

Albany Medical College does not believe, after a great many years of association with students, that they can acquire a good reading knowledge of scientific German except by working it out by means of a good dictionary while studying some particular subject; in other words, having an incentive in view.

The question of the value of a modern foreign language to a graduate in medicine was the subject of a discussion last winter by one of the committees of the Faculty of Medicine at Toronto. While some favored the idea, others opposed it with many sound arguments. One of the great difficulties that arises for those students who enter with a knowledge of French or German is that it is almost impossible for them to keep it up or develop a scientific vocabulary on account of the greatly overcrowded condition of the medical curriculum itself.

This inability to read French or German medical and scientific literature is not considered by many educators as a serious handicap to the general practitioner in his work. The majority of graduates of our medical schools will not read scientific works in any of the foreign languages; what is more, they cannot even begin to keep up with the medical literature published in English. It is pointed out that the need for reading original articles in German or French is much less urgent now that the United States has assumed such an important position in medical research. In many fields, American medicine now sets the lead. Furthermore, the fact that most articles that appear in a foreign language are available in translations and abstracts seems to result in very little actual practical value of the modern languages to the student. So that while it is true that anyone who has ever tried to search medical literature on almost any subject has found that the greatest proportion of such information in any language other than English is found in German, French, Italian and Spanish, still it is equally true that the average physician seldom, if ever, turns to foreign medical literature for his information. It is an illusion to suppose that even able physicians will ever make extensive use of either French or German, or of any other language in connection with their practice. Experience shows that they do not.

Of course, as I emphasized in my original article, the student who expects to go into medical research or enter academic life should have an adequate knowledge of German, and premedical advisers should counsel these students to gain a knowledge of this language by all means. However, there is no point in requiring German, and much less French, of all applicants in order to reach the very few that will later go into teaching or research. The student might just as well be left to take the foreign language of his choice. On this basis, there is no reason why Italian and

Spanish should not be put on a par with French or German for admission to medical schools, and many liberal arts colleges would be pleased to see these languages approved to meet the language requirement of medical schools.

That German is indispensable to the man who is going in for research and academic life is admitted by all. Not all agree, however, as to the second language. It is believed by some that French is no more important to medical men than Italian. Some have turned to the Italian literature as frequently as to the French for references in their respective fields. There is no question, they say, in the statement that French or Italian should be the second language to occupy the attention of the premedical student.

Dean William Pepper of the University of Pennsylvania School of Medicine frankly admits that the subject has often puzzled him. He tells the story of a doctor who went in to see him about his son who wanted to enter that school. Dr. Pepper explained that as the boy had had neither French nor German, he did not meet the entrance requirements, although he had had Spanish. In the discussion that followed, the father suggested that if schools were going to require a foreign language, he would have thought that schools would have selected Italian, his reason being that he had more Italian than French or German patients. The fact is that deans of medical schools are often embarrassed when they have to explain the reason why they require either French or German, knowing among other things that of those who will make use of such a knowledge as they acquire, for one article in French read probably ten will be in German.

There has been a movement to incorporate Spanish on the theory that our association with our neighbors of the south makes it desirable to have more familiarity with this language. As far as medicine itself is concerned, however, Spanish has least claim in a premedical curriculum. However, in our southern states, due to the nearness to Central and South America, Spanish is very commonly studied in the high schools and junior colleges. Dean Paul S. McKibben of the University of Southern California School of Medicine does not see why he should not accept Spanish in lieu of French or German which are definitely required there, particularly if the study of Spanish has been preceded by two or more years of Latin.

If the replies of deans of medical schools to my questionnaire received thoughtful consideration, it would seem that there is no reason why Italian and Spanish should not be placed on the same basis as other modern foreign languages for admission to medical schools. The experience of an increasing number of schools has led them to believe that there should be no distinction among French, German, Italian and Spanish, so

far as the requirements for foreign modern languages are concerned in the admission of students to medicine. These schools do not have a hard and fast language rule, and a student might offer Italian as a foreign language, provided his other requirements are met and satisfy their standards.

Those who are sympathetic toward any effort that will encourage students to master and use the Italian language, together with, or in place of, other Romance languages, ask why bother if the result will be only an extension of badly prepared students possessing a smattering of another language? The answer is that our college language departments—all of them—should so revise their courses that the average student may, after three years, attain a reading efficiency in the language he has studied. This should be feasible, especially since many schools have adopted a policy to encourage premedical students to pursue a four-year course leading to a degree of bachelor of arts or bachelor of science before beginning the study of medicine. An increasing number of students have these degrees before entering a medical college. Some deans suggest that the solution of the situation would be to raise the requirements for entrance into medicine to four years of college training and insist that the student gain in this time some real, worth-while knowledge of a foreign language.

It is argued by some deans, and with reason, that there is no reason why either Italian or Spanish should enter into a strictly premedical course. While they admit that the usual requirement of a reading knowledge of German or French is of little utilizable value, it does not follow that Italian and Spanish should be placed on the same basis. They are correct if they regard these subjects as indispensable in a strictly premedical curriculum. They are not. It is idle to require them of premedical students as premedical subjects. Dean James H. Dunham of Temple University College of Liberal Arts believes that a premedical course should be considered a college education, and should, therefore, consist of all the humanistic subjects that regular college students are required to complete. The study of foreign languages in the premedical course should follow the line indicated for all college students.

Under existing conditions it is desirable to approach our problem from the cultural point of view rather than the specific requirement that a student take one or two or more years of German or French. The knowledge of a foreign language gained by a premedical student of today is insufficient to be of much value, except from a cultural standpoint. Modern foreign language study should be considered a part of a general education rather than as a tool. The underlying idea of modern foreign language requirement is "culture," and this may be obtained from a knowledge of

Italian, Spanish, Greek, Latin or any other language. In fact, it is maintained by some schools that at least two years of Latin and one year of Greek are just as important as language admission requirements as the same number of years of any two foreign modern languages. The chief value of the modern languages to the medical student is cultural and disciplinary rather than practical. Dean Langley Porter of the University of California Medical School believes that the formal speech should be merely a tool to open vistas of the thoughts and philosophies of the people who have developed the language. It is the mode and methods of their thinking, he says, not the facts that they think about that are to be sought. A man who masters any foreign tongue well enough to enjoy that phase of it is unlikely to rest satisfied with a single language. For us in America those languages are of primary importance from which have come principally the main streams of our civilization. If, as it seems, the cultural value is the ultimate objective, then the study of even Latin or Greek would be of as much value as that of German, French, Italian or Spanish. It is this cultural value of foreign language study that makes deans opposed to the tendency of not having any foreign language requirements at all. They point out that students who have a broad cultural foundation have demonstrated the best scholastic records in medical schools.

So far we have confined our discussion to the opinion of deans of medical schools in regard to the value of modern foreign language study to future doctors. It is now important to examine the attitude of deans of liberal arts colleges. The subject of foreign modern language study in American high schools and colleges is a highly controversial one. Two extremes are to be found. On the one hand, there is a small but aggressive group of deans who maintain that foreign language study is of no value whatever and therefore should be dropped from the requirements for the bachelor's degree. On the other hand, there is a larger and a more conservative group of college administrators who believe that our colleges should not only retain modern foreign language study as a prerequisite for the bachelor's degree, but that these language requirements should be increased in quantity as well as in quality. Between these two extremes one finds several intermediate positions.

That the subject is a controversial one should cause no surprise if one recalls that in recent years modern foreign language teachers have been fighting a constant battle with teachers of social science subjects. The result has been a stubborn reaction against modern language study in high schools and colleges in favor of the social sciences. Why compel a student to study a foreign language, ask the deans in sympathy with the social sciences, if at the end of two or three years the average student is still

unable to read the language to the point of understanding and enjoyment? The reply, according to those who uphold foreign language study, is not to abolish this requirement, but to take whatever measures may be necessary so that the average student may, after two or three years of competent instruction, be able to read a foreign language with ease. Instead of trying to eliminate, some deans suggest that some consideration might well be given to the value of more than one foreign language, and even more emphasis laid on the desirability of a broad cultural education in preparation for life. Some deans feel that they cannot emphasize too strongly their belief that every encouragement ought to be given to the study of modern languages. Dean E. W. Chubb of the Ohio University College of Arts and Sciences believes strongly in the value of the study of a foreign language and for that reason deplores the tendency to allow students to enter college and to secure a bachelor's degree without any knowledge of foreign languages. Language study is still regarded by the majority as the primary source of culture.

My sweeping use of the adverb "certainly" in connection with the statement in my article that no one could consider himself educated without a knowledge of a foreign language caused surprise in some colleges. At a meeting of New England colleges held in Boston last December, Dean Gordon Bill of Dartmouth, speaking about the new Dartmouth plan of admission, made the emphatic statement that he firmly believes that a knowledge of any foreign language is not necessary to make a person either educated or cultured. Though Dartmouth has no individual specific subject requirements for admission, no student will be admitted under the new requirements entirely lacking in foreign language training, unless he has been a superlative student and because of unavoidable circumstances has been unable to secure training in foreign languages. Dean Bill indicated that he hoped the degree requirement in foreign languages might be changed so that it could be satisfied by college courses in foreign cultures as well as by courses in foreign tongues. Colleges in conservative New England are watching with considerable interest this development at Dartmouth.

College administrators who favor dropping the language requirements for the bachelor's degree must not forget that they are running the same risk as they did when the Latin requirement was discontinued. Many deans now admit that the dropping of Latin by our schools and colleges appeals to them as a distinct loss, more important, perhaps, than a lack of either French or German.

Table 1, compiled by Kenyon College, gives the language requirements of some representative colleges in the United States:

TABLE 1. LANGUAGE REQUIREMENTS IN ARTS COLLEGES.

College	Units required for admission	Languages in college	Required for graduation General requirements	Total college years or equivalent
Columbia ¹	3-4	1 or 2	3 yrs. French or German or 2 yrs. of each of two lang.	3-4
Hamilton	3-7	2	1 yr. each of 2 languages	4½
Kenyon	2	2	Through 2 yrs. of 2 languages	4
Swarthmore	3 (3 and 2)	1	1 through 3 yrs. in all or 2 through 2 yrs. each	4
Cornell	5	1	French or German units and 1 year college	3½
Wesleyan	3 of 1 or 2 of 2	2 or 1	Read French and German equivalent 2 yrs. or 3 units, or 3 units and 2 yrs. of 1 language	3½
Williams	3 Latin and 2 for lang. 1		1 yr. Latin or Greek	3½
Allegheny	2	1	3 yrs. 1 or 2 yrs. of 2	3
Bowdoin	3	1-2	A.B. Latin or Greek. B.S. 1 yr. French or German and 2 yrs. of other	3
Carleton	2 or take 1 yr. Latin in college		4 yrs. high school and college	3
Harvard	A.B. 4 B.S. 3	2	Read. 1 equiv. 5 hrs. 1 yr. (2 courses) Elements 1 equiv. 1 course.	3
Hobart	0 ?	1	3 yrs. language	3
Johns Hopkins	4	1	1 year	3
Oberlin	2 Greek or Latin 2 modern	1	1 year college	3
Park	2	1	3 units and 8 hrs. or 2 units and 2 yrs. college or 3 yrs. college	3
Trinity	0	1	A.B. 5 yrs. B.S. 3 yrs. German or 2 yrs. French and 2 yrs. German	3
Virginia	0	1	18 hours	3
Dartmouth	2 ?	1	4 yrs. 1 language school and col- lege or 5 yrs. of 2 languages	3 or 2
Amherst	5 pref.	2	1 yr. classical language and reading French or German, equivalent 3 units	2½
Colgate	3 of 1 or 2 of 2	2 ?	2 test equiv. 3 units of 2 units and 1 yr. college? (All out of latest catalog.)	2½ or less
Pittsburgh	2	1	4 yrs. in high school and college. (e.g. 2 units Latin, 1 unit French and 1 yr. college French)	2½
Yale	3 of 1 or 2 of 2	1	A.B. 1 through 3rd yr. (3 units admits to 3rd year)	2½
Indiana	2	1	Test. 2 yrs. 1 languages	2
Lafayette	0	1	2 yrs. in college	2
Lake Forest	2	0	1 year	2
Ohio State	0	1	Read. of 1 equiv. 6 courses or 5 Read. or work of 2 equiv. 4 or 3 courses	2

College	Units required for admission	Languages in college	Required for graduation General requirements	Total college years or equivalent
Ohio Wesleyan	2	1	Read. 1 equiv. 2 units and 6 hrs. or 16 hrs. college	2
Princeton	3-6	0	4 yrs. school and college. (4 units sufficient). Noted that reading knowledge of French and German is needed in "upperclass years."	2
Reed	2	0	Reading knowledge of French or German	2?
Wooster	2	1	1 year college	2
Stanford	0	0	3 high school yrs. of 1 or 2 of 2	1½
Beloit	0	0	1 or 2 yrs.	1
Chicago	0	0	1 year	1
Michigan	2	0	0	1
Antioch	0	0	0	0

1. The data on Columbia College are supplied by the author.

The teaching of languages is regarded by some deans as one of the most unsatisfactory and most disputed in the college curriculum. They charge that modern languages have been taught as badly as any subject in American high schools and colleges. Though there is some ground for this accusation, especially in the smaller colleges, yet it is very doubtful whether modern languages are more poorly taught than other subjects. Besides, recent developments in modern language teaching have done much to improve the quality of instruction. Better results may be anticipated if foreign languages were begun earlier in the life of our boys and girls, and if the same foreign language were continued longer. Deans of colleges may help by appointing only highly competent men and women in the language departments. Much of the failure in modern language study is unquestionably due to the inferior quality of teachers. Furthermore, if we are going to teach languages at all, enough should be required of them to enable a student to read the foreign languages fluently, whatever the requirement may be. Most educators agree that ten hours of work are insufficient; sixteen may be enough in some cases; twenty hours should be adequate for most students. In other words, the feeling is that there is not much cultural value in foreign languages short of three years of study, even granting that the cultural aim should be the main reason for language study and that the great foreign languages, ancient and modern, have a certain equality in this respect.

The suggestion has been made by some deans that all language departments in high schools, colleges and universities would be far better off if the language requirements were completely abolished. Even the cultural value, they say, is greatly minimized under the compulsion of required courses. The reason is that a student does this work to satisfy a require-

ment rather than to master the language; the result is that while he satisfied the requirement, he neither mastered the language nor acquired much culture from the process. Dean Walter T. Marvin of Rutgers University would make foreign languages elective in high school and college curricula, and adds that the highly intelligent man and the man seeking broad culture will be obliged, by the nature of things, in spite of the absence of regulations, to study foreign languages and literatures. It is pointed out by Dean Frank C. Foster of Tusculum College that in a section such as Greeneville, Tennessee, where that institution is located, so far removed from contact with other language groups, the teaching of a foreign language in the high schools tends to become an artificial requirement very unconvincing to the majority of students. He points out that college students, as a rule, accept the language requirement as one of the necessary ordeals without being thoroughly convinced that it is a cultural asset. On the other hand, Dean Foster admits, there are those students who see its importance.

Objection to my paper has come from some heads of German and French departments. Dean Lindsey Blayney of Carleton College, who is also chairman of the German Department, writes that the remedy for the situation is not to accept Spanish, for example, as the equivalent of German, but for German departments throughout the country to get down to serious business. He argues that the remedy is for a more scientific teaching of the modern languages. We shall never improve the present situation, he states, by claiming that one language is just as good as another for premedical work. The claim would be so ridiculous that the language requirement for graduation could certainly be eliminated from scores of American colleges and universities. He believes that the continuation of whatever success Italian and Spanish may be having will be in proportion to the amount of required language work maintained in the colleges of the United States. Professor K. Turgeon, Chairman of the Romance Language Department of Amherst College, while sympathizing with my efforts to spread Italian culture in the United States, deprecates the attempt I am making to attack the entrance requirements of the medical schools. Warning me that I am pursuing a dangerous course, he states that the "effect of your efforts will be, if at all successful, to eliminate all language requirements, rather than to include Italian in the list of favored languages."

The important point to bear in mind is that while a knowledge of German and French may be essential for certain students, Italian and Spanish may be indispensable to other students, and that from the strictly cultural viewpoint it is unfair to discriminate against Italian and Spanish.

Both languages are important not only from the practical point of view, but also from the cultural, and, therefore, it seems unjust to discriminate against them. Italian, especially, is the language of one of the great cultural races of the world, and besides Italy, as I said in my report, has made significant contributions to the applied and pure sciences. To deprive our college students of becoming acquainted with a language such as Italian seems to me to be a step backward in our educational system.

Of considerable interest are the results of two independent studies recently conducted to determine the value of modern language study in the American college curriculum. In connection with a plan to revise its modern foreign language requirements for the bachelor's degree, Kenyon College sent a questionnaire to all of its graduates between the years 1924 and 1928 inclusive, and to all those of any year who were listed in "Who's Who in America." The following summary of the answers to this questionnaire, sent to me by Dean Clarence P. Gould, shows the attitude of a select group of college graduates in regard to foreign language study. It will be noted that the majority of the students favor two languages, each to be studied two years:

1. Amount of language studied, not tabulated.
 2. Have you used your language in business? Yes, 53; no, 39.
If so, how much? Almost never, 9; sometimes, 21; they have been essential, 23; no, almost never, 6; no vote, 6.
 3. Have you used your language in travel? Yes, 38; no, 54.
If so, to what extent were they valuable? Practically no value, 3; some value, 24; essential, 11; no, practically no value, 6; no vote, 6.
 4. Have you used your languages in graduate or professional study?
Yes, 47; no, 49.
If so, how valuable have they been? Practically no value, 5; some value, 16; essential, 20; no, practically no value, 2; no vote, 6.
 5. Do you use your languages for culture or enjoyment? Yes, 75; no, 23; no, almost never, 2; no vote, 4; almost never, 6; sometimes, 40; frequently, 24.
 6. Have you found any other use for languages? Yes, 38; no, 37; no vote, 26.
 7. Would you from your experience favor as a minimum requirement for all Kenyon students (it is, of course, understood that students having a special aptitude or a special need may study them more extensively):
 - A. Two languages, each to be studied approximately two years.....53
 - B. One language to be studied approximately 3 years.....21
 - C. One language to be studied approximately 2 years.....12
 - D. Any other arrangement?

Favoring more language study than indicated in A.....	3
Favoring less	5
Choice of A and B.....	4
Choice of B and C.....	1
- Summary of No. 7—Total favoring the study of two or more languages...56
 Total favoring the study of one language.....43
 Not voting 5
 Total answers received.....104

As a result of its consideration, the language requirement of Kenyon College has been changed to either the old requirement (two years in each

of two foreign languages) or the equivalent of three years of college study in one language. The word "equivalent" implies that the requirement may be satisfied by passing an attainment test based on the given amounts of language study and not necessarily by passing the individual courses.

Professors Russell J. Fornwalt and Herbert W. Rogers of the department of psychology of Lafayette College published in the December 1934 issue of *The Modern Language Journal* the results of a questionnaire sent to 500 graduates of their institution on the values of modern language study. In resumé the results of the investigation are as follows:

Replies received: 273.

The average time devoted to the study of foreign languages had been 3.5 years. Testimony as to the amount of modern foreign language studied indicated a tendency on the part of the more recent classes to take less language on the average than classes of ten or twenty years ago.

Sixty-six per cent of the alumni replying had continued in college the foreign language begun in high school; 47 per cent had continued modern foreign language study after meeting the college requirement. After mathematics, foreign languages were the most difficult subjects in the curriculum.

Ninety per cent had one or more interests in foreign language study. In order of importance, these interests were: reading (48%); translation (44%); conversation (44%); vocabulary (29%); grammar (19%); composition (5%). Eighty-six per cent believed foreign language study to have been of some value to them. The recognized values of language study were as follows: cultural (64%); personal enjoyment (37%); mind training and disciplinary (32%); used in present occupation (27%); aiding in foreign travel (21%); research (17%); business communications (7%).

As to the practical use of foreign language study: 28 per cent read some book material in varying amount in the language studied; 10 per cent read foreign periodicals regularly, and 37 per cent read them occasionally; 9 per cent conversed frequently in the language, and 37 per cent occasionally. Seventy-seven per cent did not consider the time spent on foreign language study wasted. Seventy-five per cent recommended that there should be a modern foreign language requirement for the degrees of bachelor of arts and bachelor of science.

A careful examination of the results of these two surveys contradicts the charge made by some deans that modern language teaching is ineffective.

In addition to Kenyon College, several other institutions have under consideration or have already adopted changes in the modern foreign language requirements for the degree. Columbia College is studying the advisability of changing its requirement for the degree of Bachelor of Arts so that it will consist of passing a reading test in French or German at the level of accomplishment which may be anticipated at the end of two collegiate years of work which emphasize reading proficiency.

Hunter College has recently voted a change in the foreign language requirement, which permits of greater choice. A student may continue the high school language (one or both), or may begin a new language, as advised by the educational guidance service of the institution in terms of ability and needs. However, (1) students intending to specialize in languages, including English, must choose from among the alternatives in

such a way as to get Latin in college, unless they have had four years of Latin in high school; and (2) students intending to specialize in science, mathematics and psychology must choose from among the alternatives in such a way as to include German and French, considering high school and college together. In cases where neither German nor French is presented for entrance, and where the high school languages are a combination of Latin, Spanish and Italian, the college language shall be German. This changed language requirement is not yet in operation, since the plan is to introduce it simultaneously with changes in the other divisions of prescribed work.

The College of Liberal Arts of the University of Cincinnati has under consideration a modification of the modern language requirements. For entrance to the college the student must present two years of high school study in either Latin, Greek, French, German, Spanish, or Italian. In college, the student must devote twelve hours to the study of modern languages, not more than six of which can be met by an elementary course. This means, in practice, that the language requirements may be met by a student entering with two years of high school study of French, for example, taking one additional year in French and a beginning course in some other language of a year's duration. Thus, the net amount of study of a single language is two years in high school and one in college, which is commonly rated as being the equivalent of two years of college study. This requirement of twelve hours study is applied regardless of whether the incoming student presents for entrance to college merely the minimum of two years, or any amount in excess of this minimum. In other words, if a student enters college with four years or more of foreign languages, he must still devote twelve hours of work to language in college. It is quite apparent from the above, that the college requirement of the University of Cincinnati is applied without discrimination on the basis of the extent to which the incoming student has prepared himself in foreign languages, and as a consequence there is no incentive for high school students to do more than the minimum requirement in foreign languages. The net result is that all students, in order to qualify for the bachelor's degree, would have to complete a course in at least one language of the level of third year college work.

The College of Liberal Arts of Syracuse University has just revised its language requirements somewhat along the lines of my report, both as to the amount of language required and as to the methods of teaching.

Of the suggestions and recommendations made in my original article, that of Dean Hawkes of Columbia College, namely, that modern foreign language requirements should be adapted to the student's individual re-

quirements and aptitude, was unqualifiedly received and approved by many college administrators. Dean Harold E. B. Speight of Swarthmore, in supporting the suggestion of Dean Hawkes, writes that "rigidly defined requirements actually seem to me to defeat the very purpose an institution has in mind in applying selective methods of admission." Dean W. D. Trautman of Adelbert College, Western Reserve University, in agreement with Dean Hawkes, believes that the "required" languages are not satisfactory because the requirements are minima and seldom enough to insure desired ends. For this reason, Adelbert College does not have a specific language requirement, thus leaving the way clear for other languages. Professor Philip R. Curoe, Chairman of the Curriculum Study Committee of Hunter College, believes that the adoption of Dean Hawkes' suggestion would leave the college free to adjust curriculum experiences to the needs of students; emancipates it from the dictation of professional schools above. There is only one danger involved in removing the language requirement for the college degree—that of overcrowding the curriculum with other prescribed courses which will make it impossible for most students to include a foreign language in their college course. The elective method will prove satisfactory only if the curriculum in general is elective.

SUMMARY

1. Modern foreign language study does not have a place in a strictly premedical curriculum.
2. The main purpose of modern foreign language study is cultural. As such, German, Italian, French, Spanish, Latin and Greek should be placed on an equal basis in the college curriculum.
3. A minimum of three years of study of any one language should be required if the student is to gain a competent reading knowledge.
4. Language departments should so revise their courses that the average student may achieve a reading knowledge in three years.
5. Better results in language teaching may be expected if languages were begun earlier in life and if teachers were more carefully selected.
6. The modern foreign language requirement for the bachelor's degree should be adapted to the student's individual requirements and personality.
7. It would be a serious mistake to remove the modern foreign language requirement for the bachelor's degree unless the curriculum in general is made elective.

Psychobiology in the First Year of Medical School

ADOLF MEYER

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There is today a real demand for the admission of the study of the person to the curriculum of the medical student. It is usually mentioned under the term psychobiology. The question is: what is it? Why this term? Has anything happened that calls for it and that makes it desirable and practicable as a new help to the student? Is there a real need? And an adequate return? A reasonably compact use of the time?

There has been in the last forty years a real change in what is generally termed psychology. From being a sort of introspection lying outside of natural science, it has become as objective a study as any other, a study of living entities and of their functionings and behavior; and in the midst of appearances to the contrary, instead of new discouragements and mystifications, there comes a rather surprising realization, viz., that the best way to carry out its work is much closer to average commonsense than one would have dared to expect of this last stronghold of metaphysical conundrums. We frankly recognize that there is a functioning of the whole unit, of what we call the person, as well as a functioning of different parts, and that there is no excuse for any sidestepping of these functions since they are clearly before us, speaking to us by their performance, by whether they are there or not, and whether they work for or against the best course of life.

For centuries man had been held up as standing in many ways outside and above nature and natural science methods. What Galileo did to physics and nature has at last come to be done to the study of man and to that very feature of man of which it was said that it must be beyond human ken, that it is the one part that cannot become diseased or the subject of pathology. Within our lifetime, we might almost say over night, there has come a tendency to put aside the mystery attitude and to use the same "sense" that belongs to the scientist as well as to the man in the street, an essentially objective and sensible way of using and treating plain facts with plain methods, by avoiding a split which has too long retarded a getting together of those who must assume responsibilities with man. They want to do it frankly and honestly, without new mystifications, and without creating impressions of any great puzzle or secrets up one's sleeve. Instead of puzzling over the ultimate nature of mind and soul and life and man, we occupy ourselves with the availability or absence of capacity and the performance in the demands of life and the conditions under which they do or do not operate.

It may have seemed to some as if, all of a sudden, psychiatry had come to parade before the public and to usurp the field so as to be called a real danger to common sense in more than one discussion. Just at the time when every pediatrician began to feel that he was getting hold of important problems formerly left to the grandmothers, he feared a blast of hot air was being injected into his domain until it became clearer and clearer that it was not a question of a revolution but of organizing a rapid growth of common sense and observation, of useful work which he did not have to lose or surrender to a new set of specialists, but could, to quite an extent, absorb and cultivate in the regular courses of training as physicians.

Psychologists like Yerkes joined those who speak of psychobiology. The last two generations of American psychologists had split off from the tutelage of metaphysics and have come more and more definitely into the camp of the naturalist, where the physician is also getting his training. What had long straddled between a better knowledge of brain and nervous system, and untrained common sense about the functioning of man, is coming to stand on both feet and to "talk sense" and to work with a plain desire to want to know and see things as they are and to see them at work speaking the language of performance. We begin to treat our knowledge as being one of how to watch and do things, as well as how to talk and describe, and to try out things, instead of creating new mystifications. Instead of waiting for amazing revelations, we organize opportunities for experience, in dealing with the facts of growth and development of body and soul and mind and behavior, the child, the person, the indivisible unit or individual, and the groups in which man appears to us as the child, the adolescent, the adult, and the aged, and the partly well and the partly ill, just as we find them in real life and practice. The main point is that we turn to concrete objectivity and specificity, to the facts that speak through their performance in the service of life, hence the term psychobiology.

What we do is very simple. We want to make certain that while the student dissects the dead body, he also cultivates an interesting natural history exercise with the living. We have so far been intent on teaching him to work with the parts; now we also want to teach him to work with the man. It is odd that we have not even a simple word for this man except the person, i.e., the mask he speaks or sounds through. Do we really only study the mask, the great God Brown, or do we study from the outset the real person we actually see in the flesh, alive—I again have to say the person—which we can make intelligible even in a movie and just what we term "he" or "she," or "you" or "I"?

We deal with "experiments of nature," of man, just as Galileo did,

when he turned to the behavior of falling bodies in contrast to mere speculation. We study as observation and experience patterns of life the conditions under which they occur and operate or function, the factors on which they depend, the results, and the means of modification. This is the simple formula which we repeat and practice. We deal with presence or absence of objective events and functions, accessible to anyone properly equipped and determined to adapt his methods to the facts to be studied, instead of stubbornly forcing the facts into methods that may be best for other sets of facts but which are apt to fail with our special sets of problems.

The special feature of these entities or objects called human beings is that they are so specific and individually differentiated that we only get to know them when we know their name, the family name and something of their history. When I come to meet a person or a new group, we try to get the name with a bit of real acquaintance, of an "accognitare," of getting closer to the facts. But what is it that we want to know? The wherefrom; the whereto or line of activity and interests, and what we may have in common, and what may be specific to the entity or individual and to the family and to the groups to which he belongs!

There is no mystery about what we want. It is a question of what material the person is made of and how he uses what he is and has and what he does. We should like to know his experience, i.e., what he has gone through, and what he has done; what he usually does, is, feels, thinks, and also what he does, is, feels and thinks in emergencies and special tasks and demands, and when left to himself and his own spontaneity. These are not hard conundrums. Then, if there are special—or actually queer—things, we deal with them as we do under all such circumstances: we want to be sure of the facts and events and what we are talking about, ascertain under what conditions they appear or occur; what facts enter as factors; how it all works, with what effects, and how it can be controlled and, when necessary, modified. And where the facts are not at once sufficient, we look either into the broader settings and understandings or into the inner detail of the organism and its working, or both, but always without surrender to the obsession that we should look for something else when we should really first try to see what is at hand. We make it our habit and duty to single out what is the capacity and its actual use, not only in general, but specifically in the service of the individual or group in real life and lifetimes, working for better or for worse.

We still are too definitely brought up to think that what goes on in us is a kind of extraordinary epiphenomenon, and that what really counts can be limited to the events in the body which must be thought of in purely physiological structure-functional terms. As a matter of fact, we

cannot afford any longer not to keep the two together and to include also the situation without which the personality and its behavior would not happen and could not be understood. The medically trained worker has to learn to think more naturally and concretely and differently from the traditional mind and body, or body, mind and soul. The "person" is not a mere abstract and reflector and not merely either a body or a spirit. It is a body in action; an organism alive with flesh and bone, doing exactly what he is and does and feels and senses. Mind is organismal action. Being is the doing, feeling, sensing, wanting and refusing of the actual and real person and never only a mind or only a body. We may speak of "mentation" (when we deal with that being and feeling and sensing and dreaming and planning in their most economizing, maximally abbreviated but richly amplified form called imagination), as shorthand attitudes and performances, but originally made up of fullfledged performances.

We forget that every mentally integrated activity, as it counts in life, is just so sufficiently different from what could be started by reflex stimulation, to be at once recognizable as the action of a more or less conscious person, a real action of the person, a piece of behavior, an *érgasia* in contrast to what the physiologist singles out; with its meaning in a personal life, and with its meaning-function in group-life; more than a mere series of twitches, because it is part of a flow of function more or less smooth and but little broken up, in spite of its tremendous differentiation, always to be measured as part of the day's or the hour's or the moment's activity of a specific person or group, if we want to be accurate; and it is for that that we have terms usable for the shorthand of mere imagination (or economizing symbolization), as much as for the fullfledged behavior: our doing, our walking, and breathing, including also the action of the sense organs and the brain and our muscles and glands as integral parts of our total behavior—the person, indeed, as the self-integrator, that which furnishes the subject of our predicates and our various "ologies." We cannot report this behavior in terms of mere sensory-neuromuscular performances, but we do it in terms of action, disposals of situations, performance of tasks; and this is something we must learn to practice, just as the work in physiology and in anatomy, on the basis of objective concrete material, instead of just thinking and talking.

We must establish the habit of scrutinizing the facts and factors in their bearing on the life of any person under consideration. It is certainly not mere physiology. It is felt and remembered and anticipated and thought of in settings for which physiology does not have any terms, and for which it does not cultivate adequate terms, whereas we have no difficulty in using the hundreds of terms to be found in our dictionaries dealing

with human life and performances and discriminations, desires and aversions, felt as our own and those of others or of all of us, but in a way to be treated as we treat fractions, with obligatory reference to the person described and describable in terms of a specific life-record serving as the denominator of each fraction. No pertinent fact would be exactly the same thing in different periods of the life of the same person, not to speak of their meaning in different persons. This requires experiences with both facts and methods. There is so much of it so lightly handled and experienced and performed that in one's untrained moods one learns to pass by every morning the news of a few murders and some gloomy events of mismanaged finance, and the ruthless doings and undoings of untold numbers of people, enough to make us callous and inclined to treat even our own share without sufficient care of detail. To cultivate sound discriminating attention to human nature and human facts and doings and experiences is our job. And this requires supervised practice and not mere "thinking" and reading and talking.

Yet, it is just this kind of functioning which we may have to review, be it in the reconstruction of the picture of success or failure, which we inate without attention to the pertinent preparatory lapses; or our running into a nest of syphilis with hardly more than a "606" in the mind of a physician. We must learn to turn to where the vital things happen, where they have their beginnings and developments. And this is not so simple, as we can readily see when we ask somebody, or try ourselves, to describe the human facts and to understand what has happened and what would be necessary for the event to repeat itself—or to be prevented or changed.

How many of us could give a really useful and searching and telling usually call by the results without detail, such as the flunking of an exam- and usable description of what happens in a tantrum of a child, or in a mood of boredom that leads a person to drink, or to where he catches syphilis or ruins his chances with a job or comes to commit suicide? We are accustomed to mention these things for scolding or comment or for giving advice and preaching; but who renders them in a way which would be of use in the processes of prevention and understanding and making the events unnecessary and unlikely and others preferable and effective. Out of one hundred patients who come to the physician we realize that at least forty do not have complaints that must be scrutinized for a larger setting—for what we term mental—if they are to be treated for what they actually are, as incidents to conditions which can only be described in terms of life, or events, of performance and neglects, of dissimulation and little insidious and sometimes morbid ways of directing attention away from

where the real troubles are going on, the dissatisfactions, the unhappiness in a home, the distrust of one's security and one's health, apt to be covered up under a desire to blame something harmless for which one might get a remedy and some comfort even if one did not go to the source. To reconstruct the real events without the now fashionable months of costly searching in an unconsciousness, we must have experience with actual life, with facts and factors that play their rôle in these hindrances to human comfort and efficiency and happiness and in resources of natural betterment. The bulk of disturbers do not make the front page of our newspapers, but we must know them and know where to put our finger for timely understanding and management. When we hear a physician give an account, we want it to be direct and better than that of the untrained layman.

It is natural enough that physicians prefer to deal with what saves them the trouble of such concerns. They are trained to work with what can be given a distinguishing name and treated with a prescription. They have trained the public to expect that. But that will not stand muster any longer. There was a time when there was but one Richard Cabot. Today there are many such men who are ready to betray our foibles. And there are huge forces of false education at work. Many patients and many normals prefer a well advertised and unblushing promising quack medicine or recommended procedure to a Latin prescription or to plain advice; they look to what they think they can understand, to the chiropractor and the osteopath, who pounce on the spine to relieve "the pressure on nerves" and save one from endless rehearsals with inexperienced physicians of what consists largely of dissimulation of the plain realities. A great deal of what is wanted is plain life-experience for which it is not necessary to reach for costly analyses. The first foundation is not psychiatry; it is trained common sense and is needed in all work with man. That the psychiatrist proposes to assume the task of teaching this field, comes from the fact that to know the range of the normal one does well also to know the less normal; but one does not need to begin with stories of bankruptcy and crime to get a wholesome picture of the demands of ordinary life and the bulk of what can be bungled so as to lead to trouble.

We do not at once narrow ourselves down to a course of "medical psychology" and consideration only of the extraordinary or what may hold for the other but would have nothing to do with the average and one's own self. We base our discussions and concrete work on what is observed as happening in concrete personality-studies and observations and doings of specific persons, to be described and used in the terms which will touch what we actually find and use and see used.

The difficulty with some students is that they are too erudite and pre-occupied with their special panaceas of science and mechanistic elementalism. The difficulty of others lies in sheer indifference. But there are those who want to get out of a tangle of uncertainties and like to get their own house in order. It is not only the psychologists who have all sorts of schools, which Dr. Walshe terms the fifty-seven varieties in his discussion of the training of students, but there are also all kinds of prejudices and blunderings in the other sciences. To have but a modicum of work with a human biography, with the working out of a few of the essentials determining the life of the day or year or one's job or one's habits and urges, will not only do no harm but can be kept close to what everybody can control and try out and correct in the process if it is ineffective or disturbing or a mere complication. The student will be the better off for being familiar with the most essential sets of facts and terms and concepts, even if the terms and concepts are those of ordinary life and experience, supplemented here and there by a perhaps not as commonly used expression but one meeting the requirements and saving a lot of blundering.

If we happen to use "ergasia" for particular items of function and behavior because behavior does not have a plural nor a satisfactory adjective, we do no more than every other science does that looks for telling terms. The root *erg*—the Greek word for work—is known to every educated person and is used not only in physics but when we talk of energy as being the inherent working force.

When I talk of mentation instead of mind, anyone with some sense for language feels that we talk of action and function and not of a substance.

When I talk of subject-organization, I mean the person in action at any specific moment or in any specific situation.

When I refer to personality-organization, I immediately think of the many component traits and assets and possibly also handicaps that constitute a person.

When I speak of "person," instead of merely a mind, I mean a biological entity, with a name and life history and inner continuity and actual record, an entity spread over a lifetime between conception and death and natural periods and phases and rhythms of action and rest, wakefulness and sleep, phases of maximal fitness and states of repair.

When I speak of particular performances, I know that each one has a history, an apprenticeship, an accumulation of experience and preparedness for use.

We lost no time over puzzling about the nature of consciousness, when we take it scrupulously and with its real content as we find it and

cease talking about something devoid of facts. It is the continuity of the flow of our functioning at high pitch or at low pitch, and we take the facts as we should take to the study of the fluids after we speak of wetness or any other word ending in "ness" as the sign of its special meaning, as a condition and not as a strange something.

When we emphasize one or another special component of function, we want to know the rôle it plays, as well as the condition under which it occurs, and ways it operates and the results—the means of control and modification.

We group the actions that count and the emotions that tend to regulate them and the data of intelligence that give differentiation and selection, and we view the items for the sense they have in an actual life picture. It is their sense or meaning that is so specific in the personality function, and, so, we come to consider psychobiology as the study of the meaning-function in the process of life.

If, then, we have the habit and, perhaps, a need of looking further, into the beyond, at the beginning and at the end, and the ultimate goals, there is no need to worry lest one might have to neglect the soul and the factors constituting some of our most cherished directing lines. There is nothing in views and concepts that would hinder including ourselves in the broad sets of family, community, state and the continuity of generations and of their civilization, culture, art, philosophy and religion.

An afternoon a week, for a quarter of eight weeks, and some supervised concrete work in recording and discussing the living man, while studying the body structure and the part functions in anatomy and physiology, lays a foundation for all of medicine and for an organization of one's trained common sense and experience with facts that we cannot expect to take usable form without a modicum of supervised practice. Hence, our plea for a place for psychobiology in the medical curriculum.

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*Volunteer Intern Placement
Bureau*

For some time the Association has been of the opinion that it could render worth while service to hospitals and to graduates who find themselves without an internship and who do not seem to be able to make the right contacts, although deserving, by establishing a volunteer intern placement bureau which would give service in this direction. Often a good student succeeds in getting an appointment but when the time of beginning the service is at hand, he finds that for some reason he has been overlooked. There is little or no opportunity for him to make new contacts and, thus, he is seriously handicapped; he may even fail of graduation, if internship determines graduation. On the other hand, a similar condition may exist with the hospital which has seemingly filled its quota but finds at the last moment that one of its appointees cannot or will not come into service. In such cases a placement bureau would be in a position to render desired service to both parties.

The information now on file in the office of the Association regarding the scholastic qualification of medical students is such that a fairly accurate account of him is available. His accomplishment in college and in the medical school is carded and is complete in every detail. His application record is on file. The enrollment blanks give much valuable information—all of which can be furnished hospitals who are desirous of having this information in the selection of their interns.

The hospitals, on the other hand, should file in the office of the Association

such information as is needed to give accurate data on internships to those who desire them. By bringing these two factors together, much good would accrue to graduates and hospitals, with a minimum of effort and expense and in the best interests of medical education.

The plan was submitted recently to the Board of Trustees of the American Hospital Association, the American Protestant Hospital Association and the Catholic Hospital Association and was received with favor. Each of these three associations has appointed, or will appoint, a committee to cooperate with this Association in formulating plans of procedure. When such plans have been worked out as far as is possible, because experience in operation of the plan will, doubtless, demand revision, it will be submitted for approval to the four interested organizations. It is hoped that it will be in operation next year with the present senior class.

Although the suggestion to establish this bureau (that may not be the best name for it, but a better one may result from later discussions) is only a few weeks old, hospitals are already asking to be permitted to avail themselves of this opportunity and promise full co-operation. The plan does not entail enforced compliance. Whether a hospital will accept the recommendations for interns made by the bureau remains its privilege; likewise the graduate is not bound by a suggested placement. It is merely an effort to bring together, with a minimum of effort and expense, two parties who but for such a bureau would, in all likelihood, not meet.

Several hospitals have inquired wheth-

er they would be privileged to submit to the Association for evaluation the lists of selected interns before a final decision is reached. That, of course, is a comparatively simple assistance so far as this Association is concerned. It would only mean reference to the students register cards and transcribing from them whatever information the hospital desires.

On the whole, at the moment, there is every reason for feeling that a plan of this sort will be a great help where, often, help is most needed.

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Preparation for the Study of Medicine

At the time of going to press indications are that the Toronto meeting will be attended by many more persons than any previous meeting. The reason no doubt is the fact that the session on the first day is given over to a consideration of subjects which have to do largely with preparation for the study of medicine, and that three of the six papers will be read by members of arts college faculties, men who have given much thought to what may be regarded as adequate preparation for the study of medicine, at least in three of the prescribed subjects—physics, biology and chemistry. A considerable number of members of arts faculties have signified that they would attend the meeting to hear and to participate in the discussions on these papers. Arts college executives want to know what medical educators regard as good preparation for the study of medicine. They find that in the course of many years there has arisen much misunderstanding as to what medical educators want their prospective students to know; whether science or culture should be stressed; whether two, three or four years of attendance at college is preferred. The opportunity to discuss these problems mutually has never before presented itself. Hence, this program is at-

tracting country-wide attention among the arts faculties and the faculties of the medical schools as well.

As a matter of fact, the amount of preparation for the study of medicine, the time element, does not seem to enter into the picture to any large extent, except that the arts colleges have been attempting to crowd as much work as possible into the minimum time requirement with far from satisfactory results. Students seem to be less concerned with time than has been the case in the past. A very small percentage (about 5 per cent) come with less than three years of preparation; more than 50 per cent come with a degree. Of those who have less than three years of preparation, about 4 per cent have had from 65 to 82 hours, leaving 1 per cent who offer only 60 hours. The discussions in Toronto may result in a change in entrance requirements.

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American Students in British Medical Schools

For the first ten months of 1935, only 34 applications made by American students in the medical schools of Great Britain have been received by the Association for evaluation. This is a marked reduction from nearly 700 such applications in 1930. True, these applications do not represent all the applications made by Americans; neither did the 700. They merely are the applications of those students as wish to be placed on the British medical students' register. Students applying to the so-called extra-mural medical schools do not go on this register, but reports received from these schools by the Council on Medical Education and Hospitals of the American Medical Association show that even in these schools the number of American students has dropped off considerably. The trek toward the East has been checked at least in this direction. Unfortunately, the number of Americans is in

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the medical schools of Italy has increased tremendously in the past few years, but most of these students are of Italian parentage. Very few, memory does not recall any, of this group attempted to be admitted to a British school in the past few years. Hence, the number of American born Italians who desire to study medicine must be increasing rapidly.

In previous issues of the JOURNAL the application records of American students in foreign countries was reviewed and analyzed. It was not flattering to either the students or the medical schools concerned. However, it is gratifying to note that the tide is going out.

* *

New Policy of the American Medical Association

A business meeting of the Council on Medical Education and Hospitals was held in Denver, September 15.

According to the minutes the survey of American medical schools so far completed has revealed certain significant weaknesses; namely,

There is a tendency for medical schools to enlarge their enrollment without a corresponding increase in personnel or instructional facilities.

With a growing appreciation of the

necessity for an intimate correlation between clinical and laboratory knowledge, it is evident that this can be obtained only by increasingly close contact between preclinical and clinical departments continuously maintained from the time the student first enters the medical school until he graduates.

The advances of the medical sciences have been and should be independent of any sectarian point of view, and medical education should not be handicapped or directed by a dogmatic attitude toward disease.

For these reasons the Council took the following action:

(a) *Resolved*, That in each medical school the number of students should not exceed the number that can be adequately taught with the laboratory, library and clinical facilities available and for whom a sufficiently large and competent teaching staff is provided.

(b) *Resolved*, That after July 1, 1938, the Council on Medical Education and Hospitals will no longer publish a list of approved two-year medical schools.

(c) *Resolved*, That after July 1, 1938, the Council on Medical Education and Hospitals will no longer carry on its approved list schools of sectarian medicine.

College News

University of California Medical School

Dr. Chauncey D. Leake has been appointed librarian to succeed Dr. Sanford V. Larkey, now librarian of the William H. Welch Library in Baltimore.

Dr. Chas. S. Capp has been appointed assistant professor of roentgenology. Dr. Capp formerly was on the faculty of the University of Chicago.

The Department of Obstetrics and Gynecology has instituted a new endocrine laboratory for investigation of hormone secretions in tumors and cancer and study of amenorrhea and dysmenorrhea. The work is undertaken with adequate laboratory facilities.

Studying in the Department of Pharmacology during the summer were Dr. Norman David, of the University of Cincinnati; Dr. Peter K. Knoefel, of the University of Louisville; and Dr. George A. Emerson of the University of West Virginia.

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University of Colorado School of Medicine

FACULTY CHANGES: Dr. Robert Levy resigned on June 30, 1935, as professor and head of the department of otolaryngology. Dr. Melville Black resigned on October 1, 1935, as professor and head of the department of ophthalmology.

Dr. Levy was appointed professor of otolaryngology in 1911, at the time of the union of the University of Colorado School of Medicine and the Denver and Gross College of Medicine. He has been a most earnest and constructive worker in medical education for many years. He was one of the organizers of the Gross Medical College (Colorado) in 1887. When the Gross Medical College

united with the Denver Medical College under the name of the Denver and Gross College of Medicine, in 1902, Dr. Levy retained his rank of professor of laryngology and rhinology on the faculty of the new school until 1911, when this school became a part of the University of Colorado, and he was appointed professor of otolaryngology.

Dr. Black has been a member of the Faculty of the University of Colorado School of Medicine since 1891. He was promoted to the rank of professor of ophthalmology in 1917, to succeed Dr. Edward Jackson, who resigned at that time.

Dr. James Melville Shields has been appointed professor of ophthalmology and head of the department, to fill the vacancy occasioned by Dr. Black's resignation. Dr. Shields is a graduate of Jefferson Medical College (1912), and has been a member of the faculty of the University of Colorado School of Medicine since 1919.

Other faculty promotions and appointments: Dr. William M. Bane, associate professor of ophthalmology; Dr. Glen E. Cheley, associate professor of surgery; Dr. J. Fredric Prinzing, assistant professor of surgery; Dr. Thaddeus P. Sears, assistant professor of medicine; Dr. Earl J. Perkins, Dr. Ragnar J. Ness, Dr. Joseph E. A. Connell, and Dr. Leonard Freeman, Jr., instructors in surgery; Dr. H. Dumont Clark and Dr. Ward Darley, instructors in medicine; Dr. Isadore Gersh, instructor in clinical pathology; Dr. Frank B. Queen, instructor in pathology.

Dr. Rodney H. Jones, assistant professor of clinical pathology, resigned on June 30, 1935. Dr. Jones received his first appointment to the faculty as instructor in clinical pathology, and was

promoted to the rank of assistant professor in 1931. He is now associated in private practice with Dr. James J. Waring, Denver.

FACULTY NEWS: Dr. James J. Waring, professor of medicine, was elected president of the National Tuberculosis Association at the 1935 meeting of the Association at Saranac Lake, New York. Dr. Waring has been closely identified with tuberculosis work for many years.

Dr. Franklin G. Ebaugh, professor of psychiatry and Director of the Colorado Psychopathic Hospital, has returned from a visit to England, where he read a paper on "Association Motor Investigation in Clinical Psychiatry" at the Second Neurological Conference. He also visited hospitals in England and on the continent.

STUDENT NOTES: The following prizes and scholarships were awarded to members of the student body at the close of the school year in June: Alpha Omega Alpha Prize in Anatomy: Miss Mariana Gardner (Freshman); Chester H. Elliott Memorial Prize in Pathology: Miss Marjory I. Andresen (Sophomore); Dr. James C. Todd Prize in Clinical Pathology: Mr. William A. H. Rettberg (Senior); Edward G. Stoiber Scholarship: Miss Lillian Cottrell (Junior).

Child Research Council (affiliated with the University of Colorado School of Medicine): New appointments: Dr. John A. Anderson and Dr. Mary Elizabeth Downing, fellows in pediatrics and physiology; Dr. Marion M. Maresh, fellow in radiology; Dr. Karin A. Petri, fellow in anatomy (anthropometry).

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University of Arkansas School of Medicine

The new medical school building is completed and in use beginning with the 1935-1936 year. The building and equipment cost \$500,000. It adjoins the Little Rock General Hospital in which much of the clinical teaching is done under a

long term contract with the city. Thus the medical school, which for many years was occupying quarters wholly inadequate and far from satisfactory so far as construction is concerned, comes into a beautiful new building, adequate in every way. Much new equipment has been provided and many needed facilities make this one of the best physical plants of its kind for a medical school.

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Louisiana State University School of Medicine

A schedule for fifth year students interning in the Charity Hospital is now in force. Classes will meet twice a week. Instruction will be given by members of the hospital staff. A lecture on history taking and keeping of records opens the course.

Announcement is made that henceforth students who have failed in or been dropped by any medical school will not be accepted by L. S. U.

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University of Manitoba Faculty of Medicine

Dr. Joseph L. Jackson, assistant professor of anatomy, has been appointed professor of anatomy at the University of Saskatchewan School of Medical Sciences to succeed the late Dr. Robert T. McGibbon.

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University of Toronto Faculty of Medicine

Dr. William A. Scott, assistant professor of obstetrics and gynecology has been appointed head of the department, to succeed Dr. William B. Hendry, who recently resigned.

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University of Oregon School of Medicine

Eli Lilly and Company, Indianapolis, have established a research fellowship

in physiology in this school. The fellowship pays \$1,200. Dr. George E. Burdet, professor of physiology, will have charge of the work.

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The Jefferson Medical College

The 111th annual session was inaugurated September 23, 1935. Mr. Wilfred W. Fry, president of the Board of Trustees, presided. The introductory lecture was delivered by Louis H. H. Clerf, M. D., professor of bronchoscopy and esophagoscopy, on "Medicine as a Career."

Dr. Ross V. Patterson, the dean of the college, welcomed the 536 members of the student body. Of this number, 144 are new students, 134 admissions to the first-year class.

The members of the first-year class were prepared for medical study in 57 different institutions; all of them have pursued and completed four years of preliminary and preparatory study and graduated from these institutions before being admitted to the medical course.

Geographically, 18 states and insular possessions are represented, as follows: Pennsylvania, New Jersey, Delaware, New York, North Carolina, West Virginia, Rhode Island, Connecticut, Montana, Ohio, Massachusetts, Florida, Michigan, South Carolina, New Mexico, District of Columbia, Virginia, and Puerto Rico.

Dr. David M. Davis has been appointed professor of genito-urinary surgery, to fill the vacancy created by the death of Dr. Thomas C. Stellwagen.

Doctor Davis is a graduate of Princeton University and of the Johns Hopkins Medical School. A considerable part of his special training was received in the Brady Institute, in association with Dr. Hugh H. Young, with whom he collaborated in the preparation of a widely known and authoritative textbook on this subject.

He occupied the chair of urological surgery in the University of Rochester Medical School for a period of four years, resigning to form an association with Doctor Young.

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George Washington University School of Medicine

This school announces the establishment of a four year integrated curriculum in public health teaching to parallel its curriculum in mental health established three years ago under Dr. William A. White. The public health curriculum has been made a part of the regular medical course for the doctor of medicine degree, but is also open to special and graduate students in the public health field. Courses in community health, sanitation, hygiene, preventive medicine and the public health aspects of medicine and surgery are included.

The faculty is composed of the following specialists: Roscoe Roy Spencer, A.B., M.D., associate professor of hygiene and preventive medicine; coordinating officer; Warren F. Draper, A.B., M.D., professorial lecturer in public health administration; Walter L. Treadway, M.D., professorial lecturer in preventive medicine; Royd R. Sayers, M.D., professorial lecturer in industrial hygiene; William Charles White, M.B., M.D., professorial lecturer in tuberculosis; Louis L. Williams, M.D., and R. A. Vondelehr, M.D., professorial lecturers in preventive medicine; Estella F. Warner, M.D., professorial lecturer in child hygiene; Leslie C. Frank, C.E., Ralph E. Tarbett, B.S., and Selwyn D. Collins, A.M., Ph.D., professorial lecturers in sanitary science.

Other new appointments to the faculty and staff for the coming year include: A. K. Balls, M.D., adjunct professor of biochemistry; Edward Lewis, M.D., assistant professor in pediatrics; William S. Anderson, M. D., instructor in pedi-

atrics; Harry A. Davis, M. D., instructor in pathology; Elmer W. Fugitt, M. D., clinical instructor in medicine; Madison Hunt, A.B., M.A., fellow in biochemistry; Harry S. Douglas, A.B., M.D., and Otto Behrens, M.A., Ph.D., research assistants in biochemistry; Clement J. Rodden, B.S., M.D., microanalyst in biochemistry.

University of Kansas School of Medicine

Dr. Earle G. Brown has been appointed professor of hygiene and preventive medicine. Dr. Brown is secretary of the Kansas State Board of Health. He retains this position.

University of Cincinnati College of Medicine

The 1935-1936 session opened recently with an enrollment of 76 freshmen.

Dr. A. Graeme Mitchell, professor of pediatrics, has been appointed administrative consultant for the Georgia Warm Springs Foundation.

Dr. John H. Foulger of the department of pharmacology, has resigned to accept a position with the Haskell Laboratory for Toxicological Research. Dr. Norman A. Davis has been appointed assistant professor of pharmacology.

Cornell University Medical School

Dr. William B. Colby, professor of clinical cancer research, received an honorary fellowship in the Royal College of Surgeons.

Vanderbilt University School of Medicine

Dr. Hugh J. Morgan has been appointed professor and chief of the department of medicine, succeeding Dr. C. Sidney Burwell who is now dean of

the Harvard Medical School and research professor of medicine.

Yale University Medical School

Dr. Bela Halpert, assistant professor of pathology and surgery, has been appointed head of the division of pathology and assistant director of laboratories in the Jewish Hospital, Brooklyn.

Temple University School of Medicine

John Ignatius Fanz, head of the department and professor of pathology, bacteriology and hygiene, died August 26, 1935, at the age of 44.

Dr. Fanz was born in Philadelphia, February 1, 1891. He received his preliminary education in the public schools of Philadelphia, graduating from the Central High School in 1908. He received the degree of Doctor of Medicine from the Jefferson Medical College, Philadelphia, in 1912, and completed his internship at the Jefferson Hospital. From September 1914 to June 1916, he held the position of demonstrator in biology and histology at the Jefferson Medical College. He acted as curator of museums to the same institution from June 1916 to September 1918. In the fall of 1915, he was appointed demonstrator and later associate in the department of bacteriology and hygiene, which position he held until the spring of 1923. During the same period, he was clinical pathologist to St. Agnes Hospital, Philadelphia. In 1923, he was appointed head of the department and professor of pathology, bacteriology and hygiene at the Temple University School of Medicine, Philadelphia, which position he held until the time of his death. In conjunction with this work, in 1928, he was appointed pathologist to the Philadelphia General Hospital.

The opening exercises were held Sep-

tember 25, Dean Parkinson presenting the members of the teaching staff to the new students. Professor Kolmer delivered a short address.

The enrollment for the session 1935-1936 is as follows: First year, 112; second year, 108; third year, 118; fourth year, 127.

The total of 465 includes 127 students enrolled here for the first time, 110 of whom were admitted to the first year class and 17 to the third year class. These students completed their premedical courses in fifty-one colleges.



Western Reserve University School of Medicine

The School of Applied Social Sciences of Western Reserve University, Cleveland, received a grant of \$10,000 from the International Health Division of the Rockefeller Foundation "to strengthen the public health nursing practicing field for graduate and undergraduate nursing students."

How the money will be expended to benefit graduate and undergraduate students in the School of Applied Social Sciences, the Frances Payne Bolton School of Nursing, and other affiliated hospital schools of nursing, the Health Stations of the City of Cleveland, workers in various health agencies, and the general public sick and well was outlined by Dean J. Elbert Cutler of the School of Applied Social Sciences.

Besides the station of the Cleveland Board of Health which the university has for many years conducted, and where their students have received their field training, it will now expand into another, in which the students will receive more varied experience in a different class of population.

To carry this expansion of work, a number of new appointments will be made to the faculty. First in importance will be Miss Lucy Ethelyn Massey of

Chattanooga, Tennessee, who resigns as Assistant State Supervising Nurse of the Tennessee State Department of Public Health to come to Reserve as assistant professor of public health nursing.

Other new faculty appoints will be those of Miss Luceil Campbell and Mrs. Marion Anderson Fluent as field instructors in public health nursing.

Scholarships will be also awarded from the grant to Miss Bertha Henderson, graduate of the Jewish Hospital School of Nursing, Cincinnati, now on the staff of the Department of Health of Cleveland, and to Miss Mary Ivanko, graduate of St. Johns Hospital School of Nursing and member of the Visiting Nurses Association, for study in the School of Applied Social Sciences.

For the benefit of the well members of the community and in order that they may have an understanding of public health work, the school will sponsor a series of lectures throughout the winter. The first of these, open to the public, was given by Dr. C. E. A. Winslow, head of the department of medicine of Yale University, on the afternoon of Friday, October 11.

For members of staffs of public health agencies of the city, the grant will make possible three graduate courses: Supervision in Public Health Nursing, Principles of Public Health Nursing, and Principles of Public Health Teaching, to be given by Miss Massey and Miss Katherine Faville, professor and associate dean of the Bolton School of Nursing.



Medical College of Virginia

Through an anonymous gift of \$300,000 and a federal grant of \$239,850, an outpatient clinic building with associated medical laboratories, which has been planned by the institution for several years, will shortly go under construction. The building will be seven stories in height, the four lower floors to be as-

signed to clinics, the upper floors for teaching laboratories in pathology, bacteriology, biochemistry, public health and preventive medicine. The building will be located in the hospital group and subsequently a new hospital will be constructed adjoining. The clinic and laboratory building is designed in the shape of a T; the hospital will be designed in the shape of a Maltese cross.

New appointments: Dr. Paul Kimmels, associate in pathology; Dr. Ernst Fischer, associate in physiology; Mr. John E. Davis, instructor in physiology; Dr. L. S. Meriwether, instructor in neuropathology and neurosurgery.

The 1935 graduating class of the school of medicine of seventy-six was approximately twenty less than in the previous years, reflecting the plan of the institution to reduce medical school enrollment.

Beginning with the session 1935-1936 a three year premedical college entrance requirement became effective. For several years this has been virtually the requirement, yet was not fully representative until the current year.

October 11, 1935, marked the one hundredth anniversary of the birth of Dr. Hunter McGuire, one of the founders of the University College of Medicine, now a part of the Medical College of Virginia. Appropriate exercises commemorating the occasion were held.



Meharry Medical College

At the Annual Commencement of Meharry Medical College, held May 23, forty senior students in medicine received the degree of Doctor of Medicine. Every one of these men is now serving an internship in the various hospitals in the United States where a Negro can get an internship. There were calls for at least fifteen more interns than could be filled.

Dr. Samuel Henry Freeman, assistant professor of orthopedic surgery, is on a leave of absence from the college to do

postgraduate work in orthopedic surgery at the University of Iowa, under the supervision of Dr. Steindler. Dr. Freeman is a graduate of Meharry Medical College, Class of 1928, and has been connected with the college since his graduation. Dr. H. H. Walker, dispensary physician, will serve as assistant during Dr. Freeman's absence.

Professor Harold West, associate professor of chemistry, is also on a leave of absence from the college, to work on his Doctorate degree at the University of Illinois. His place is being filled by Professor J. D. Hayes, a graduate of the University of Iowa.

Dr. W. A. Beck, professor of internal medicine, at Meharry Medical College, has just returned from attending the meeting of the Southern Tuberculosis Conference and Southern Sanatorium Association, which was held in Rice Hotel, Houston, Texas. He was one of the speakers at this meeting. His subject was "Difficulty of Early Diagnosis of Tuberculosis in the Negro."

Dr. Mullooney, President of the College, visited the alumni of Meharry in Kansas City and Denver in an effort to have them create a Student Loan Fund.



College of Medical Evangelists

C. H. Watson succeeds the late A. G. Daniels as president of the college board. Dr. E. H. Risley has been elected as dean of the college, with office in Los Angeles. Dr. W. E. Macpherson is the dean of the Loma Linda division. Dr. A. E. Coyne, former dean of the Los Angeles division, has been appointed superintendent of the White Memorial Hospital, and Dr. R. J. Thompson, former superintendent of the White Memorial Hospital, is devoting his entire time to the department of obstetrics and gynecology.

New Appointments: Dr. Albert Brown, instructor in pathology; Dr. Elmer Gilbert, instructor in medicine; Dr. D. E.

Griggs, chief of the medicine clinic in the dispensary; Dr. A. D. Myers, instructor in physiology in the Loma Linda division; Dr. Clarence Dail, instructor in physical therapy in the Loma Linda division.

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New York Homeopathic Medical College

At a meeting of the Board of Trustees of the Fifth Avenue Hospital in New York City, held October 16, 1935, the following members of the Board of Trustees of the New York Homeopathic Medical College and Flower Hospital were elected members of the Board of the Fifth Avenue Hospital: William M. Baldwin, Thomas C. Buck, Eversley Childs, Jr., Joshua B. Everett, William H. English, Charles D. Halsey, David Q. Hammond, Clifford Hemphill, James M. Hills, Henry Clay Irons, George Link, Jr., James M. Mathes, Samuel R. Milbank, George S. Piper, Robert T. Pollock, Charles Presbrey and Webster B. Todd.

This action, which follows months of negotiation between the two institutions, represents the first step in developing a close affiliation. For the present, each institution, through its respective Boards, will operate independently although along parallel lines.

At a subsequent meeting held October 22, 1935, the following officers were elected: Claude A. Burrett, M.D., Director; David Q. Hammond, Superintendent; Beatrice E. Ritter, R.N., Principal of the School of Nursing.

The Fifth Avenue Hospital building will be used jointly by both hospitals under one administrative management charged with the responsibility for carrying out the chartered provisions of each.

Both Boards are convinced that the adopted program is mutually advanta-

geous. The Fifth Avenue Hospital will greatly strengthen the educational program of Flower. This together with the Metropolitan, one of New York City's great municipal hospitals, will give the college unexcelled opportunity for clinical teaching and research. Flower Hospital, which has been utilizing clinical buildings erected half a century ago, will receive all the advantages of a modern plant and an opportunity to conserve its assets for income. Such conservation will permit the later erection of new college buildings, adequate room for which is available on unused property owned by and adjacent to the Fifth Avenue Hospital should such use prove mutually feasible to both Boards of Trustees in the future.

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Duke University School of Medicine

September 30 the School of Medicine began the autumn quarter with a total of 217 students. Eight of the seniors in the School of Medicine completed the course August 31 and are now interning in various hospitals.

D. F. Marion, Wm. Schulze and H. F. Swingle were elected to membership in Alpha Omega Alpha fraternity during the summer quarter.

New appointments: Drs. T. B. Coolidge and H. D. Tidwell, instructors in biochemistry; Dr. W. M. Nicholson, instructor in medicine; Dr. N. F. Conant, associate professor of bacteriology, and Dr. Louis Spekte, instructor in pediatrics.

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University of Pittsburgh School of Medicine

Dr. Stanley S. Smith has been appointed professor of ophthalmology succeeding Dr. Blair. Dr. George J. Wright succeeds Dr. McGennan as professor of neurology.

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General News

Frank E. Bunts *Educational Institute*

Recently founded in Cleveland by relatives, friends and the Cleveland Clinic Foundation as a memorial to the late Dr. Bunts, announces its first graduate review course to be given November 11-13, on "Diagnosis and Treatment of Diseases of the Glands of Internal Secretion." The course is open to all licensed physicians and surgeons after acceptance by the registrar; only fifty applications can be accepted. Members of the staff of the Cleveland Clinic Foundation and invited guests will conduct the course. The institute was chartered last January to give graduate instruction in all branches of medicine and surgery to physicians who have graduated from approved medical schools.

Application blanks and an outline of the course may be obtained from Dr. Albert D. Ruedemann, Cleveland Clinic, Cleveland.

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Samuel D. Gross Prize

Dr. Owen H. Wangensteen, professor of surgery in the Medical School of the University of Minnesota, has been awarded this prize for 1935 for an essay entitled "The Therapeutic Problem in Bowel Obstruction." This prize is awarded every five years by the Philadelphia Academy of Surgery for the best original essay on surgical pathology or surgical practice founded on original investigations.

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Examination for Psychiatric Position

The U. S. Civil Service Commission announces an open competitive examination for a position as psychiatric med-

ical supervisor for the Department of the Interior to have charge of the 300 legally adjudged insane of Alaska, confined in Morningside Hospital, Portland, Ore., which is operated under contract with the United States. The position carries a salary of \$5,600 a year, subject to a deduction of 3.5 per cent toward a retirement annuity. Applicants must have graduated from a recognized medical school, must have had either a regular rotating or a psychiatric internship of one year or experience considered equivalent to such internship and must have had not less than five years of responsible and progressive specialized experience in neuropsychiatry, of which at least three years must have been in a senior administrative capacity in a mental hospital with a daily average of not less than 300 patients under their care. They must not have reached their fifty-third birthday and must be in sound physical health. Further details and application forms may be obtained from the secretary of the Board of Civil Service Examiners at any first class postoffice, from the commission at Washington, D. C., or from the district offices of the commission at Atlanta, Boston, Chicago, Cincinnati, Denver, New Orleans, New York, Philadelphia, Seattle, St. Louis, St. Paul, San Francisco, Honolulu, Balboa Heights, C. Z., or San Juan, P. R. Applications must be filed not later than October 6.

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Casselberry Prize

The secretary of the American Laryngological Association, Dr. James A. Babbitt, Philadelphia, announces that the Casselberry Prize of \$500 is open to competition for work in laryngology and rhinology. The award was established

by the late Dr. William E. Casselberry, Chicago, who left a fund to the association, the interest from which was to be awarded in sums of \$500 or less for a prize award, a decoration or the expense for original investigation in laryngology and rhinology. Theses or reports of work must be in the hands of Dr. Babbitt, 1912 Spruce Street, Philadelphia, before February 1 of any given year.

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Iowa Board in Basic Sciences

The Iowa basic science law enacted by the forty-sixth general assembly became effective July 4. The first meeting of the board of examiners in basic sciences, appointed by the governor, was held in Des Moines, July 9. Members of the board are: Joseph H. Bodine, Ph.D., professor and chairman, department of zoology, State University of Iowa, Iowa City; Edward A. Benbrook, V.M.D., professor and head, department of veterinary pathology, Iowa State College, Ames; Benjamin H. Peterson, Ph.D., professor and head, department of chemistry, Coe College, Cedar Rapids; William L. Strunk, D.Sc., professor of biology, Luther College, Decorah; Charles H. Carter, Ph.D., professor of biology, Parsons College, Fairfield; Robert E. O'Brian, Ph.D., president, Morningside College, Sioux City.

At the meeting, July 9, Professor Strunk was elected chairman and Professor Penbrook, secretary. The new law requires that no member of the board shall hold a degree in any of the healing arts. The act does not apply to Christian scientists or to those holding licenses in any of the healing arts or related professions in Iowa. Nor does it apply to students regularly registered, enrolled and in attendance as of July 1, 1936, in accredited schools of medicine, osteopathy or chiropractic in the state. With these exceptions, the law will affect all persons who hereafter apply for licenses to prac-

tice medicine or surgery, osteopathy and surgery, chiropractic or any other system or method of healing hereafter to be legalized in Iowa, who will be required to present a certificate of having successfully passed an examination in the six basic sciences, anatomy, physiology, chemistry, pathology, bacteriology and hygiene. The first examination will be held October 3-10. Iowa is the ninth state to enact a basic science law.

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Foundation for Study of Poliomyelitis

The Rhode Island Infantile Paralysis Foundation was established August 31 with a gift of \$5,000 from Mr. William S. Cherry, Sr., Providence. Immediately after a charter was received from the state, the foundation was organized with Drs. Edward A. McLaughlin, Providence, state director of public health, and Dennett L. Richardson, Providence, as president and vice president. The foundation will seek more funds with which to conduct research and education, but it will devote itself immediately to relief of convalescents.

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George S. Cox Medical Research Institute

This Institute is one of the medical units affiliated with the University of Pennsylvania. An advisory council was recently appointed. The members are: J. B. Collip, professor of biochemistry, McGill University; George A. Harrop, associate professor of medicine, Johns Hopkins University; Elliott P. Joslin, clinical professor of medicine, Harvard University; Philip E. Smith, associate professor of anatomy, Columbia University; Rollin T. Woodyatt, professor of medicine, University of Chicago, and O. H. Perry Pepper, professor of medicine, University of Pennsylvania. Research will be confined to a study of diabetes.

Book News

Food and Beverage Analysis

By Milton A. Bridges, B.S., M.D., Assistant Clinical Professor of Medicine and Lecturer in Therapeutics, Columbia University New York Post-Graduate Medical School. Lea & Febiger, Philadelphia. 1955. Price, \$3.50.

This book is unique in the multiplicity of food analyses it contains covering nutritive, mineral and vitamin values and alcoholic analyses. The data, bibliographic and analytical, are as late as of July 1935, and the bibliography is very extensive. Each food item presents not only the percentage composition of the nutritive elements, but also the number of grams of each element in each portion of a specific food. The average household portion is stipulated in common measures. The alcoholic table presented is as of 1935. More than 3,200 analyses of nutritive values are presented, more than 400 iodine analyses, 350 analyses of vitamins, and the analyses of more than 500 foods for their content of calcium, phosphorus, iron, copper, manganese, chlorides and salt are included.

This book should have great value for students of nutrition and dietetics. It is not large and is bound in limp covers, making it easy to handle.

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Laboratory Methods of the United States Army

Edited by James S. Simmons, B.S., M.D., Ph.D. Director of Laboratories, Army Medical Center; associate editor, Cleon J. Gentzkow, M.D., Ph.D., Chief Division of Chemistry, Army Medical School. 4th Ed. Lea & Febiger, Philadelphia. 1935. Price, \$6.50.

The present edition of this manual has been prepared at the Army Medical School, Washington, D. C., in compliance with the wishes of the Professional Service Division of the office of the Surgeon-General. Its scope has been enlarged to include material other than strictly technical procedures. Tables of classification and brief summaries of the more important characteristics of certain bacteria have been added to the section on bacteriology and the sections on protozoology, helminthology and entomology have been expanded to include illustrations of certain organisms. There are new sections on Rickettsia, filterable viruses and statistical methods and most of the chapters have been entirely rewritten to reflect the many advances that have been made since the last edition appeared.

This work offers a complete laboratory guide for college courses in bacteriology.

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A Treatise on Medical Jurisprudence

By Benton S. Oppenheimer, LL.B., LL.M. Professor of Medical Jurisprudence, College of Medicine, University of Cincinnati. William Wood & Company, Baltimore. 1935. Price, \$4.

This book is based on the lectures delivered by the author to medical students. It is sufficiently devoid of unnecessary legal hypertechnicality to be intelligible and informative to one who is untrained in the law. It gives helpful suggestions to the physician concerning his legal rights and duties and will aid him to avoid those legal entanglements which occasionally ensare the unwary. Among

the topics presented are: medical jurisprudence and the practice of medicine; relation between the physician and the patient; duties and obligations of physician and patient; malpractice; hospitals; dying declarations. A good book for every medical student.

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Clinical Parasitology and Tropical Medicine

By Damaso de Rivas, B.S., M.D., Ph.D. Professor of Parasitology in the Graduate School of Medicine and Assistant Professor of Pathology, University of Pennsylvania; in collaboration with Carlos T. deRivas, A.B., M.D., Pathologist to the Santo Tomaso Hospital, Panama. Lea & Febiger, Philadelphia. 1935. Price, \$5.

The book aims to present the modern conception of tropical and parasitic diseases from the standpoint of etiology, the complete life history of parasites, and the pathology, symptomatology, diagnosis and treatment of these infections. Facts take the place of theories and speculations, and form and content combine to make the text of most practical value to the premedical and medical student.

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Human Pathology

By Howard T. Karsner, M.D., Professor of Pathology, Western Reserve University. 4th Ed. J. B. Lippincott Company, Philadelphia. 1935. Price, \$10.

The revision has been extensive. More than 300 new references to the literature have been added. The chapters on the general pathology of tumors, with minor exceptions, has been rewritten. The chapters on the hematopoietic system, the ductless glands and the nervous system show many changes. A deservedly popular textbook.

The Anatomy of the Nervous System From the Standpoint of Development and Function

By Stephen W. Ranson, M.D., Ph.D., Professor Neurology and Director of the Neurological Institute, Northwestern University Medical School. 5th Ed. W. B. Saunders Company, Philadelphia. 1935. Price, \$6.50.

Although the text has been completely revised, the subject matter has not increased in volume. Many new illustrations have been added, grouped together as an atlas at the end of the book. Included are twenty-five diagrammatic drawings from toluidine blue preparations showing the arrangement of the nuclei of the brain stem. A fine text for medical students and those wishing to specialize in neuro-anatomy.

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A Textbook of General Bacteriology

By Edwin O. Jordan, Ph.D., Professor of Bacteriology, University of Chicago. 11th Ed. W. B. Saunders Company, Philadelphia. 1935. Price, \$6.

Rewritten in many parts and completely revised in others. Bacterial variation is dealt with in a new and separate chapter. The chapters on immunity, Salmonella, streptococci, Brucella, Rickettsia and on spirochetes are modified and enlarged. The section on the viruses and virus diseases has been largely rewritten. The popularity of this book as a text for medical students speaks for its worth.

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Treatment of Diabetes Mellitus

By Elliott P. Joslin, M.D., Clinical Professor of Medicine Harvard Medical School, and Dr. Howard F. Root, Dr. Priscilla White and Dr. Alexander Mar-

ble. Lea & Febiger, Philadelphia. 1935. 5th Ed. Price, \$6.00.

This work reflects the experience of the leading authority in the treatment of diabetes mellitus over a period of 37 years, during which time he has treated some 13,000 cases of this disease. It records the evolution of its treatment and shows why the greatly increased longevity of diabetic patients may be confidently expected to be extended still further. The book summarizes the vast progress in the study of the disease, particularly in relation to the endocrine glands. It provides the physiologic and pathologic background so essential to complete understanding, shows how the needless deaths that result from coma and gangrene may be avoided, and points out the dangers of neglected obesity.

Dr. Joslin's collaborators, with their special knowledge of diabetic surgery and circulatory conditions and their experience in chemical research and in the handling of diabetic children, have contributed much to the broadening of the text. They offer the fruits of years of intensive specialization. In its present edition this book will be found more useful than ever before.

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Pathology of Internal Diseases

By William Boyd, M.D., Professor of Pathology in the University of Manitoba. 2d Ed. Lea & Febiger, Philadelphia. 1935. Price, \$10.

To develop the subject along clinical and physiological lines, and to include a considerable amount of new material the work has been rewritten and much new material has been added.

New illustrations have been included, especially those of clinical conditions in the sections on ductless glands and the nervous system. The book covers those diseases ordinarily found in medical wards of teaching hospitals. It is an

illustrated textbook of internal medicine based on the mechanism of disease. Its references, arranged under subject headings, are all useful. Discussions of each subject lead straight to the relation of symptoms to lesions, indicating the interrelations of anatomy and histology, of physiology and clinical medicine. The construction follows the trend of medical education by assembling and correlating all of the subjects listed in every medical curriculum. This should prove to be a very valuable book for the medical student.

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Diseases of the Nose and Throat

By Chas. J. Imperatori, M.D., and Henry J. Burman, M.D., Instructor of Clinical Otolaryngology New York Post-Graduate Medical School, Columbia University. J. B. Lippincott Company, Philadelphia. 1935.

A comprehensive description of the diseases most frequently encountered is given, while the less common conditions are noted briefly. Emphasis is placed on the importance of thorough and routine examination. Symptoms, diagnosis and treatment are considered first; the pathology and causation last. The text is placed in outline form to facilitate reference. The entire arrangement is commendable and specially adapted for use by the medical student.

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Preventive Medicine and Hygiene

By Milton J. Rosenau, Professor of Preventive Medicine and Hygiene, Harvard Medical School and Harvard School of Public Health. 6th Ed. D. Appleton-Century Company, New York. 1935.

Rewritten; much new matter added; dead wood deleted. New matter: Contra-

ception; maternal mortality; heart disease; diabetes; ringworm; snake poisoning; psittacosis; periodic health examinations; hospitals. In every sense a new book; completely covers the field; authoritative; reliable.

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Aids to Ophthalmology

By N. Bishop Harman, F.R.C.S., Eng., lecturer in ophthalmology, West London Post-Graduate College. 8th Ed. William Wood & Company, Baltimore. 1935. Price, \$1.25.

A handy little volume. A chapter on standards of vision and seven chapters on refraction form a short but complete guide to the student. A veritable "multum in parvo."

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L'Organisation de l'Oeuf chez les Chordés. (Etude d'embryologie causale.)

By Albert Dalcq, M.D., Professor of Anatomy, University of Brussels. Gau-

thiers-Villars & Cie, Paris. 1935. Price, 65 francs.

The field of experimental embryology seeks to define the causal relationships that exist between the various embryological processes. This field is now dominated by the "organizer theory" of Spemann, whose experiments on the amphibian embryo have shown that the dorsal lip of the blastopore, which invaginates during gastrulation to form the notochord and somites, is the "organization center" of the embryo. A part of this "organization center," implanted into the ventral region of another embryo, induces the tissues of the host to form about it the axial structures of a "secondary" embryo. Such "inductions" have now been obtained in embryos of almost every class of the chorates, including the mammals. It is, therefore, believed that the organization center is of general significance in initiating and guiding embryonic development. Professor Dalcq's lucid account is directed mainly to the student of experimental embryology, but will be read with enjoyment by all those interested in problems of general biology.

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